Volume 68
Number 1

March, 1954
Pages 1-95

$4.00 a Year
$1.25 a Number

Journal of the New England Water Works Association

ISSUED QUARTERLY

Published by
NEW ENGLAND WATER WORKS ASSOCIATION
73 Tremont Street, Boston 8, Massachusetts

Entered as second-class matter September 23, 1903, at the Post Office at Boston, Mass., under Act of Congress of March 3, 1879
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1953 - 1954

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THE Association was organized in Boston, Mass., on June 21, 1882, with the object of providing its members with means of social intercourse and for the exchange of knowledge pertaining to the construction and management of water works. From an original membership of only TWENTY-SEVEN, its growth has prospered until now it includes the names of 900 men. Its membership is divided into six classes, viz.:

A Member shall be an officer or employee of a public or private water works, an engineer, chemist or other person qualified to aid or interested in the advancement of knowledge relative to water works.

An Honorary Member shall be a person of acknowledged eminence in some branch of water supply or of engineering.

A Junior shall be not less than eighteen years nor more than twenty-five years of age, a student or connected with water supply work.

An Associate shall be either a person, firm or corporation engaged in manufacturing or furnishing materials or supplies for the construction or maintenance of water works.

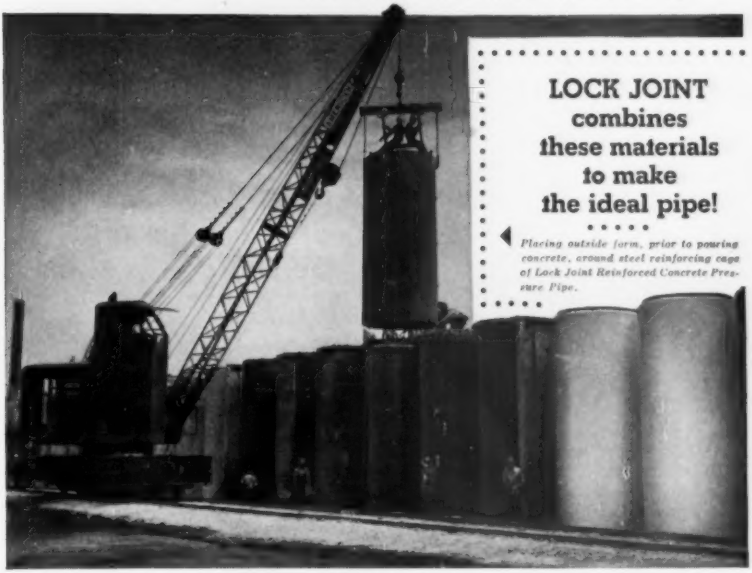
A Corporate Member shall be either a Water Board, Commission, Company or Municipal Corporation.

The initiation fees and annual dues are as follows:

Initiation Fees		*Annual Dues*	
Members	$ 3.00	Members	$ 6.00
Juniors	1.00	Juniors	3.00
Associates	10.00	Associates	20.00
Corporate Members	10.00	Corporate Members	10.00

This Association has at least eight regular meetings each year, of which five are held in Boston, one in northern New England, one in southern New England, and one, the annual convention, held in September or October on such date as the Executive Committee may designate.

There's no substitute for CONCRETE and STEEL!



LOCK JOINT combines these materials to make the ideal pipe!

Placing outside form, prior to pouring concrete, around steel reinforcing cage of Lock Joint Reinforced Concrete Pressure Pipe.

CONCRETE, with its proven qualities of durability, non-corrosion, resistance to electrolytic action, and high compression strength is combined, by Lock Joint, with steel's toughness, resilience and high tensile strength to make a pipe that retains the best qualities of both—non tuberculance, high structural strength and long life with little or no maintenance. Dense concrete affords complete protection for the quality reinforcing steel. Both materials are carefully calculated to meet your pressure needs with a wide factor of safety. The Lock Joint Pipe Company's Rubber and Steel Joint is extremely watertight and, at the same time, flexible.

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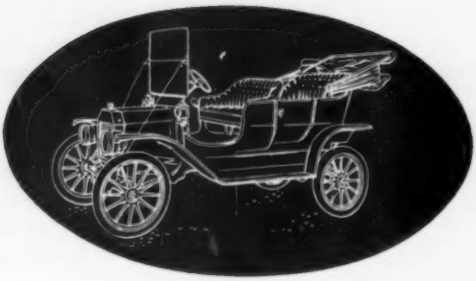
SCOPE OF SERVICES—*Lock Joint Pipe Company specializes in the manufacture and installation of Reinforced Concrete Pressure Pipe for Water Supply and Distribution Mains 16" in diameter or larger, as well as Concrete Pipes of all types for Sanitary Sewers, Storm Drains, Culverts and Subaqueous Lines.*



Would you keep on repairing a 1912 car?

There are many thousands of meters purchased thirty or more years ago still in service. They are being periodically repaired—frequently rebuilt from the old meter case up. This practice can impose a tremendous burden of trouble and expense on a water utility, especially at today's higher labor rates.

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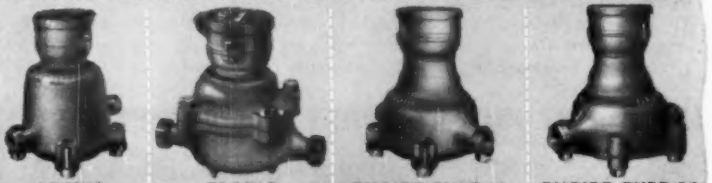
Rockwell Modern Meters For Modern Measurement Needs



ARCTIC	TROPIC	EMPIRE TYPE 12	EMPIRE TYPE 14
Disc Type	Disc Type	Piston Type	Piston Type

The Symbol for Service, Quality and Performance in Water Meters

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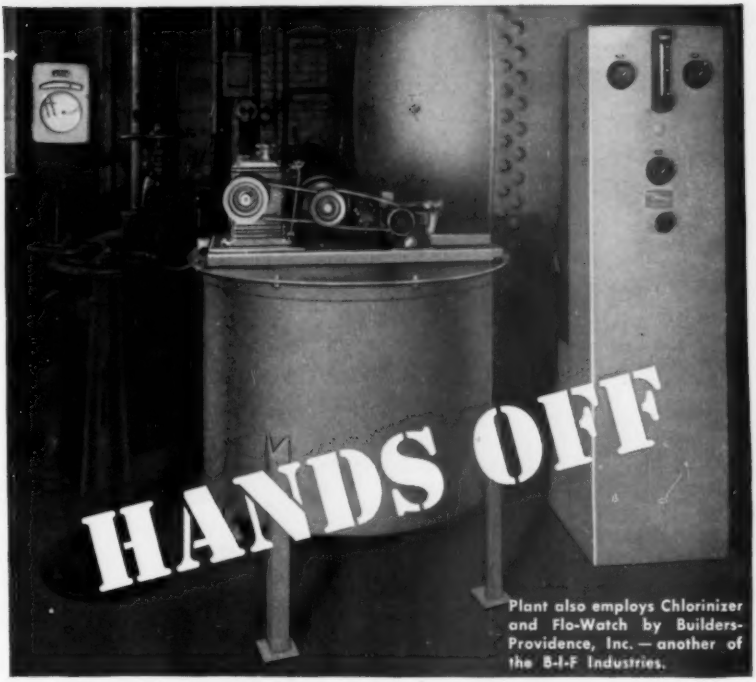

Plant also employs Chlorinizer and Flo-Watch by Builders-Providence, Inc. — another of the B-I-F Industries.

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Corrosion Control at Work

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METERS
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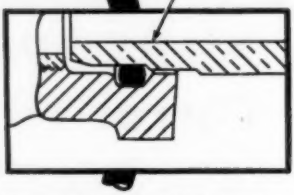
WITH

NEW RING-TITE JOINT.....



Smith A.W.W.A. Specifications Gate Valves (4" through 12") and Smith Fire Hydrants (with 4" and 6" connecting joints) are now available with Ring-Tite joints for direct connection to Johns-Manville Class 150 Transite Ring-Tite Pipe. No special fittings or extra joint material needed. Installation is quick, easy, economical, and joints can be made in any weather and in roughest terrain. Tight, flexible joints are assured. At low pressures, radial compression of rubber rings seals the joint; increasing pressure wedges the rings—the higher the pressure the tighter the seal. For complete details write for Bulletin RT 53.

44

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EASY TO INSTALL

The KORNERHORN

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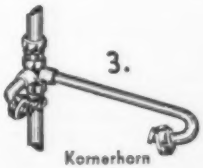
2. Add Connections



3. Kornerhorn in place

When Valves are Needed

Ford Kornerhorn valves installed on the supply side, or on both sides of the Kornerhorn add extra convenience and cleanliness when meters are changed.

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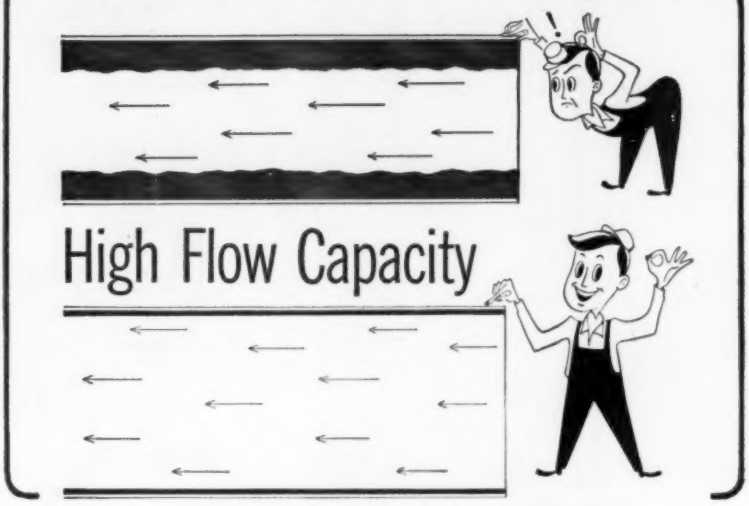


. . . Bitumastic 70-B Enamel makes the difference by preventing corrosion

● Flow capacity *stays* high when Bitumastic® 70-B Enamel protects interior surfaces of steel pipe lines. This durable enamel prevents rust, corrosion, incrustation and tuberculation... keeps pipe lines from "shrinking." With this kind of protection, there's no need to spend money on *over-sized* pipe in order to allow for future loss in flow capacity. Flow tests conducted on steel pipe lines, centrifugally lined with hot Bitumastic 70-B Enamel, have shown the value of Hazen-Williams coefficient "C"=145 to 160.

BITUMASTIC 100TH Anniversary PROTECTION 1854 1954

You can save money in another way with Bitumastic 70-B Enamel. When applied to a thickness of 3/32", it protects the exterior of pipe against the corrosive action of the soil. It is wasteful to specify an excess of wall thickness to compensate for corrosion. It is more economical to specify just enough wall thickness to give the pipe adequate structural strength and to use Bitumastic 70-B Enamel to prevent corrosion.

Use strong, durable steel pipe, lined and coated with Bitumastic 70-B Enamel, and give your community worthwhile savings. Write for full information on protecting large-diameter water lines.

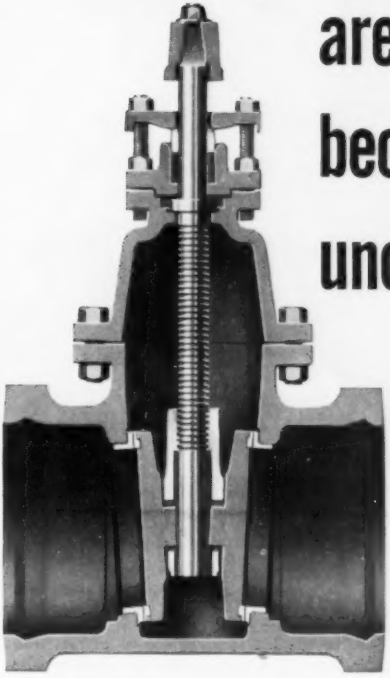
KOPPERS BITUMASTIC ENAMELS

KOPPERS COMPANY, INC.

Tar Products Division, Dept. 306-T, Pittsburgh 19, Pennsylvania

DISTRICT OFFICES: BOSTON, CHICAGO, LOS ANGELES, NEW YORK, PITTSBURGH, AND WOODWARD, ALA.

R. D. Wood Gate Valves are reliable because they are uncomplicated



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There's a sort of reverse English to designing R. D. Wood Gate Valves. The point is to make them as simple as possible, to eliminate all the ingeniously complicated parts that look good in the blueprint but cause operating failures deep down in the lines. You'll appreciate their rugged simplicity when you put them to the test. R. D. Wood Gate Valves are built to function for generations of trouble-free flow control.

FEATURES OF THE R. D. WOOD GATE VALVE

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TAPPING SLEEVES AND VALVES

are your **STRONGEST**

branch main connections!

Any movement of a branch main creates high stresses at the branch main connection. Mueller tapping connections are specifically designed with heavy ribs to actually strengthen the main. Connections may be made quickly, under pressure, without loss of water or interruption of flow.

The heavy, corrosion-resistant bolts have self-holding heads and are closely and evenly spaced in perfect alignment along the side flanges of the sleeve for maximum rigidity. The wide, thick side flanges are grooved for positive retention of the lead gaskets to assure a lifetime watertight joint.

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Mueller Mechanical Joint Sleeves can be adapted to fit all classes of cast iron pipe by changing the end gaskets. The raised cast ring in the calked joint sleeves centers the ring and keeps the use of expensive lead to a minimum.

Mueller Tapping Valves have oversize seat openings to allow the use of full-size shell cutters.

Tapping valves can be furnished with either "O" ring packing or conventional packing and mechanical joint or hub end outlet.

Consult your Mueller Water Works Catalog W-96 or see your Mueller representative for full details.

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Wide World Photo

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THIS CITY STREET CAVED IN when a water main broke. It's a dramatic, but not an unusual example of what water does to road bedding.

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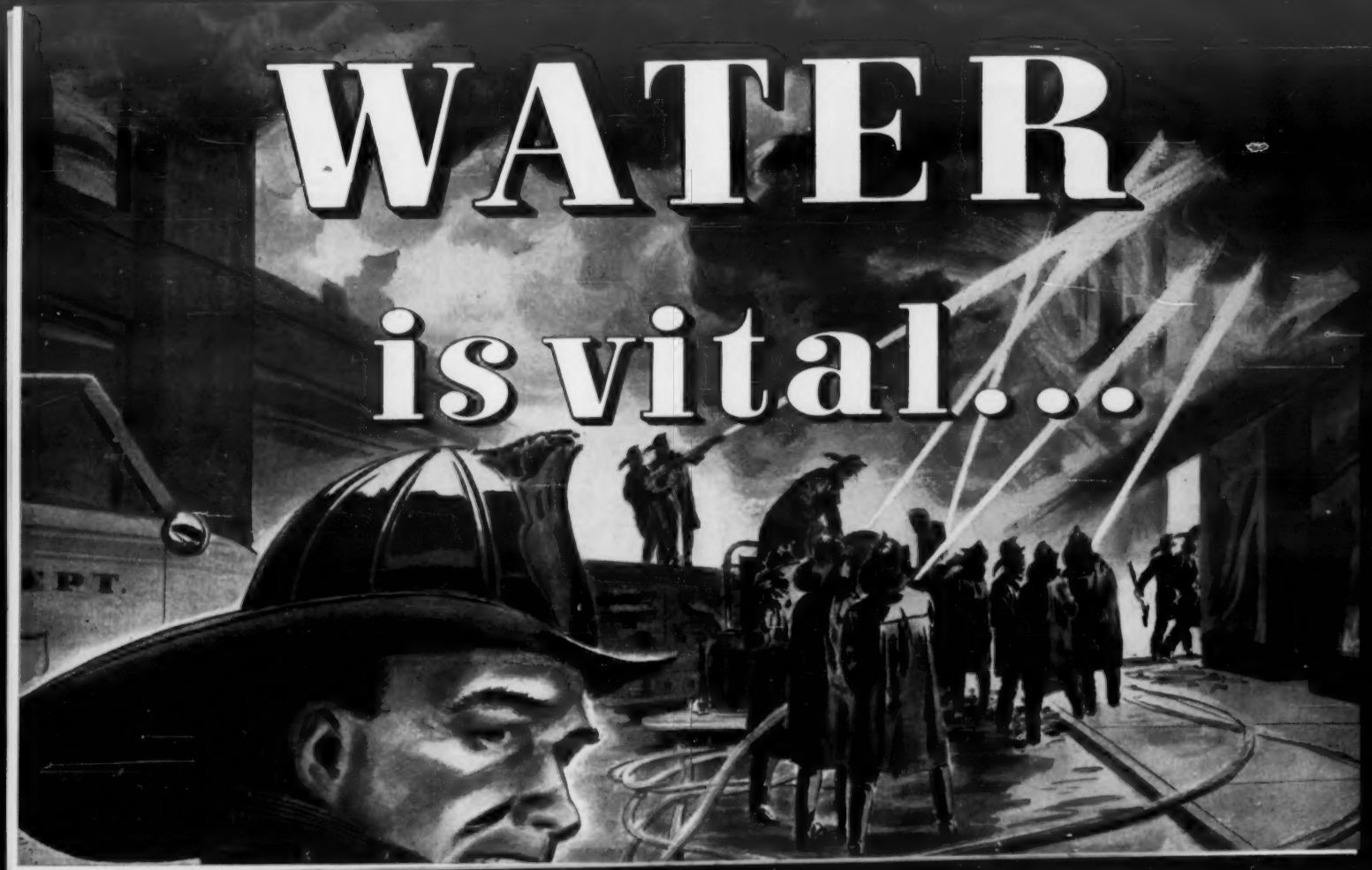
Branch Offices in Principal Cities of United States and Latin America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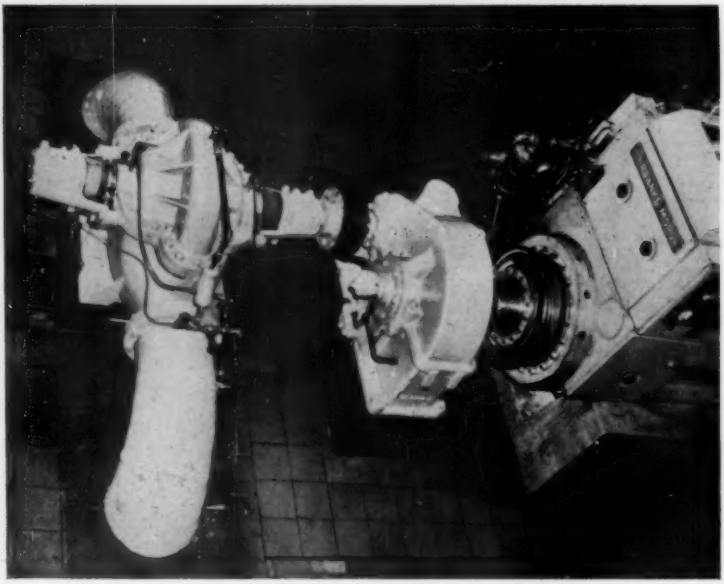
is vital...

BADGER meters
conserve it!
Water saves lives in emergencies . . . and millions of gallons are required for fire-fighting alone each year. Badger water meters help thousands of communities to conserve water for such needs . . . measure water precisely for homes and industry . . . provide an accurate check on water usage and water waste. And the record of Badger meter performance, known everywhere, has caused thousands of waterworks men to say—"It pays to choose Badger!"
BADGER WATER METERS
BADGER METER MFG. CO., Milwaukee 45, Wisconsin
"Measuring the water of the world"

ANOTHER FAIRBANKS-MORSE LEADER



12"x14" Fairbanks, Morse Figure 5814 Pumps

Pictured above is a bird's eye view of one of the two 12" x 14" Fairbanks, Morse Figure 5814 Double Suction Horizontal Split Case Centrifugal Pumps, supplying the Arlington, Arlington Heights and Belmont sections of the Metropolitan District Commission's Water Division.

Each of these two pumps rated at 6000 G.P.M. at 220 TDH is driven by an eight cylinder Model 31A8½ Fairbanks, Morse Diesel Engine.

Installed in early 1953 as part of the MDC's new expansion program, both pumps take suction from the Wachusett Reservoir, Clinton, Massachusetts, distributing main and boost the pressure in the area served.

A trained Fairbanks, Morse Engineer is on hand to help solve YOUR pumping problems.

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feeding and proportioning equipment for solutions . . . . . .

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NEW
A. Rubber rings popped into grooves before assembly
B. Lubricated pipe slides in under rubber rings
C. Both pipes in assembled position. Rings compressed and locked in place.
TRANSITE RING-TITE COUPLING

Coupling and Pipe made of strong, corrosion-resistant asbestos-cement Transite

cuts installation costs through fast assembly —insures locked-in tightness

PIPELINE ASSEMBLY can be made easy and fast with the Johns-Manville Transite® Ring-Tite® Coupling. This is the new asbestos-cement coupling for Transite Pressure Pipe that gives every joint locked-in tightness.

Record savings achieved

The Ring-Tite Coupling is effecting installation savings every place it is used. Every step of the way, its special advantages and automatic features pay off.

The Ring-Tite coupling automatically aligns and adjusts for expansion. Rings are simply popped into grooves and pipes pulled together.

Pipe ends are automatically separated within the coupling. This provides for expansion and flexibility . . . permits line to conform to curves . . . to withstand shock and vibration . . . to relieve line stresses.

With the Transite Ring-Tite Coupling, no complicated equipment is required. Installations can be successfully completed under adverse weather, temperature or terrain conditions. And the Ring-Tite Coupling is listed by Underwriters' Laboratories, Inc.

Savings at fittings, valves and hydrants, too

The Ring-Tite Coupling will permit savings of money and time by joining pipe directly to fittings, valves and hydrants embodying the Ring-Tite design.

For further information write to Johns-Manville, Box 60, New York 16, N. Y.

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TRANSITE PRESSURE PIPE

Central Tank—500,000 gallon Double-Ellipsoidal design. Tower height 48 ft 4 ins.

BALANCED WATER STORAGE

AT DARTMOUTH, MASS.

North Tank—500,000 gallon Double-Ellipsoidal unit. Tower height 39 ft.

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South Tank—300,000 gallon Double-Ellipsoidal design. Tower height 104 ft 3 ins.

Pipe Line Equipment
WATER · GAS · SEWER

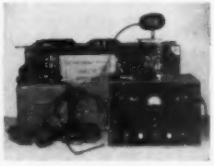
Bottled Gas Lead Melting Furnace

Asbestos Joint Runners

Best quality asbestos rope, brass caps attached to each end. Equipped with clamps.

M-D Cut-In Connections for Sewers

A light cast iron fitting with bell end for connecting house service with main sewer pipe without necessity for placing a Y-branch or T-branch in the sewer line.



Leak Detector

A truly fine instrument designed to solve even the most difficult leak detecting problem.

Calking Tool Outfit

For water mains up to 12". Strong leather bag. Keeps the right tool for every job within easy reach.

Test Plugs for Bell or Spigot End Cast Iron Pipe.

On this page are shown only a few of the hundreds of items to be found in the POLLARD Catalog. Write for a copy of Catalog No. 25F.

Portable Lead Melting Furnace

A handy outfit for quick action, equipped with gasoline burner.

Pipe Cutter

Inexpensive way of cutting pipe. Every wheel in contact with the pipe is a cutting disc, so cutter need be moved only a short distance to cut entirely around the pipe.

Tapax

The original manhole cushion. Takes the bang out of manhole covers.

M-Scope Pipe Finder

It's easy to locate a buried pipe line with this handy pipe finder.

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Chicago, Ill.

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333 Candler Bldg.
Atlanta, Ga.

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Fabian Bachrach

WILLIAM B. DUFFY

President of the New England Water Works Association, 1953-1954

New England Water Works Association
ORGANIZED 1882

VOL. LXVIII MARCH, 1954 NO. 1

This Association, as a body, is not responsible for the statements or opinions of any of its members

DETERIORATION OF THE HYDRAULIC CAPACITY OF PIPELINES

BY ALEXANDER J. MINKUS*

[*Read at Superintendents' Round Table, Jan. 22, 1953.*]

Most of us living in the New England area are sadly familiar with the corrosive effects of our water on metals and the resulting reduction in capacity of iron pipelines. Our waters can materially reduce the capacity of concrete mains as well, but by an action that differs from corrosion. Experience with the water supply of Hartford substantiates this statement. Here there is a very soft surface supply with an average hardness of about 14 ppm, an alkalinity of 12 ppm, pH 6.6, color 20 ppm, and turbidity rarely over 1.5 ppm.

Two mains carry this water to the filter plant from the upland sources, one a 42-inch, cement-lined cast-iron pipe and the other a 36-inch, Lock Joint concrete pipe. Both have lost their carrying capacity by a very significant amount in a short time. The background of this situation is as follows:

For 22 years, a single 42-inch cast-iron main with no lining delivered the water from the main source, the Nepaug Reservoir, to the filter plant. The corrosive quality of a water with these characteristics quite understandably reduced its hydraulic capacity and this circumstance, coupled with increased demands for water, made it necessary in 1942 to construct another line parallel to this one. A 36-inch Lock Joint pipe was installed, tested and found capable of delivering a maximum of 35 mgd, the test indicating a Williams-and-Hazen coefficient of 150.

It was now possible to take the 42-inch cast-iron main out of service, clean it and apply a ¼-inch cement lining. This was done by the Lock Joint Pipe Co. in 1945 and, on completion, the line was tested and showed a coëfficient of 137, or a capacity of 50 mgd. One of the

* Engineer of Purification, Water Bureau, Metropolitan District, 115 Broad St., Hartford, Conn.

contract provisions for this work stipulated that the lining was to be guaranteed to remain sound for two years. Accordingly, in 1947 a flow test was made and, to our dismay, showed that the capacity had dropped from 50 to 44 mgd, and that the Williams-and-Hazen coefficient was now only 120. We unwatered the line, fully expecting to find a considerable portion of the lining spalled off, but surprisingly enough it was all intact and smooth. However, it was covered with a very thin coat of dark-colored slime. We crawled through the whole seven miles of this line to check this and found all the lining to be in good mechanical condition, and no obstructions of any kind.

While this was going on in the 42-inch cast-iron main, we of course had to use the 36-inch Lock Joint pipe, built in 1942. To our further dismay it was discovered that this line could no longer deliver the original capacity of 35 mgd, but only 27 mgd, equivalent to a Williams-and-Hazen coëfficient of 114, or a reduction in capacity of 23% in 5 years. The line was unwatered, and we crawled through its 7-mile length and again found the interior surface hard and smooth, but covered with the same dark-colored slime.

To dispel any thought that these deteriorations were just initial changes that stopped immediately thereafter, there is shown on Figure 1 a record of the coëfficients obtained in subsequent years. This is a schematic diagram of our supply mains, showing the coëfficients for the various sections and the date they were obtained. It is apparent that the deterioration had continued, but at a much slower rate. The latest tests, made in December, 1952, show that the 42-inch cement-lined main now has a coëfficient of 106, compared to 137 in 1945, while the corresponding figures for the 36-inch concrete pipe are from 150 to 111 in the ten years between 1942 and 1952.

The coëfficients obtained in 1949 and subsequently are believed to be of a high degree of accuracy. Fortunately there is a high hill adjacent to the upstream junction of the 42- and the 36-inch mains. To obtain the hydraulic gradient, a garden hose was attached to 8-inch branches on these mains and extended some 1,000 ft horizontally and 175 ft vertically, until the water column could be observed in a glass tube. The ends of these mains discharge into a conduit which flows partially full; therefore, the elevation of the water surface could be readily obtained here. Bench marks have been established at the

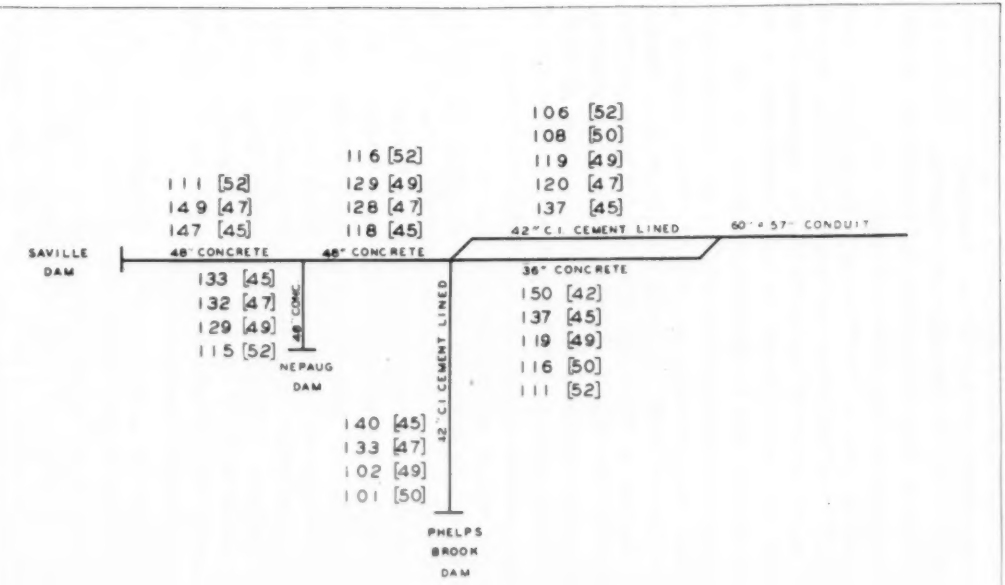
106 [52]
108 [50]
119 [49]
120 [47]
137 [45]
116 [52]
129 [49]
128 [47]
118 [45]
111 [52]
149 [47]
147 [45]
42" C.I. CEMENT LINED
60" x 57" CONDUIT
SAVILLE DAM
48" CONCRETE
48" CONCRETE
36" CONCRETE
133 [45]
132 [47]
129 [49]
115 [52]
48" CONC.
NEPAUG DAM
42" C.I. CEMENT LINED
150 [42]
137 [45]
119 [49]
116 [50]
111 [52]
140 [45]
133 [47]
102 [49]
101 [50]
PHELPS BROOK DAM
WILLIAMS & HAZEN COEFFICIENTS OF SUPPLY MAINS
[ ] DATE OF TEST

FIG. 1.

end of each line and the difference in elevation of the hydraulic gradient is readily measured within a tenth of a foot. The lengths of the lines, approximately seven miles, are known exactly from our construction surveys and therefore the slope of the hydraulic gradient can be computed with much greater accuracy than warranted.

To determine the volume of water flowing, there are Builders Iron Foundry venturi tubes and registers at the foot of each dam. In addition, there is a venturi meter in the 48-inch main, upstream of the junction of the 42- and 36-inch mains. By using Saville Dam as the source of supply, the discharge is measured by two meters. The adjustments of the two meters are checked before a test and they agree within ¼ mgd in 27 mgd, or about one percent. Furthermore, after completing a test with the Saville Dam as the source, we have changed to the Phelps Brook Dam as the supply and used that meter to obtain the quantity and check the original coëfficient. Under these considerations, it is believed that the coëfficients obtained are correct within 1 or 2 units. Since the tests are made in the same way each year, all errors are constant and the difference in the coëfficients truly reflects the changes in the condition of the pipe.

The sections of line between the dams and this upper intersection of the 42- and 36-inch lines are tested in the same way. The hydraulic grade is determined by extending a hose line up the downstream face of the dam and measuring the elevation of the water column.

The coëfficients obtained prior to 1949 are also believed to be of good accuracy. The hydraulic grade was obtained then by an ingenious pressure-measuring device, designed by Harold W. Griswold.* He employed the apparatus for testing pressure gauges, which employs weights to give a known pressure, to measure the major portion of the pressure, and obtained the full value by adding or subtracting a small increment, measured with a mercury column.

The accuracy of these measurements just confirmed the indications that there was a real problem in deterioration of the pipe capacities and not a false alarm due to poor measurements. What was causing these changes? As stated previously, the deposit on the pipe walls is very thin—about 1/32 to 1/16 of an inch—and the reduction in pipe diameter could not account for the reduction in capacity.

* Consulting Engineer and Past President of the New England Water Works Association.

Immediately on un-watering a pipeline, the slime looks and feels very smooth. We wondered if this remained true when there was water in the pipe; therefore, we adjusted the flow in one of the mains so that the water just filled the main at one of the high points in the line, where there was an access manhole. On reaching into the pipe through the manhole and feeling the pipe wall, it could be said with a little imagination that there was a rougher feeling to the deposit. With the elimination of all other conceivable causes, it must be the character of this deposit which has reduced the capacity of the mains.

We, of course, wanted to know what the constituents of this deposit were. Upon examination under the microscope, there were no algal forms visible—only a mass of amorphous matter. The chemical analysis proved very interesting. Some of this slime deposit was scraped gently from the interior of the 36-inch main, dried at 103°C. and analyzed for the chemical constituents. The dried material was 11% by weight of the wet deposit, the moisture depending on the length of time before the sample reached the laboratory.

Figure 2 is a graph of five analyses made on samples taken along the length of the pipe in the direction of water flow. It shows that the largest portion of the material was manganese, ranging between 30 and 47%. There was about 20% of organic matter, or possibly carbonates, as measured by the loss-on-ignition test. The iron content ranged between 8 and 20%. The remainder consisted of silica, calcium and magnesium, which could have been scraped from the pipe wall, even though the deposits were removed with gentle scraping.

From this it appears that the deposit was mostly manganese and iron, with organic material serving as a binder. Yet, we had never experienced colored-water troubles which could be attributed to manganese. As infrequent tests of the past had shown barely measurable amounts of maganese in the water, this was not a routine test with us.

After analyzing the pipe deposits, we considered it advisable to make a test and look for increases in the manganese concentration. But a test on the water collected at the intake of Phelps Brook Dam showed only 0.008 ppm of manganese. A sample collected on the same day from the discharge end of the supply mains showed a concentration of 0.004 ppm. Although the concentrations were small, it was significant that there was a 50% reduction, indicating that some manganese was being left behind in the pipe line.

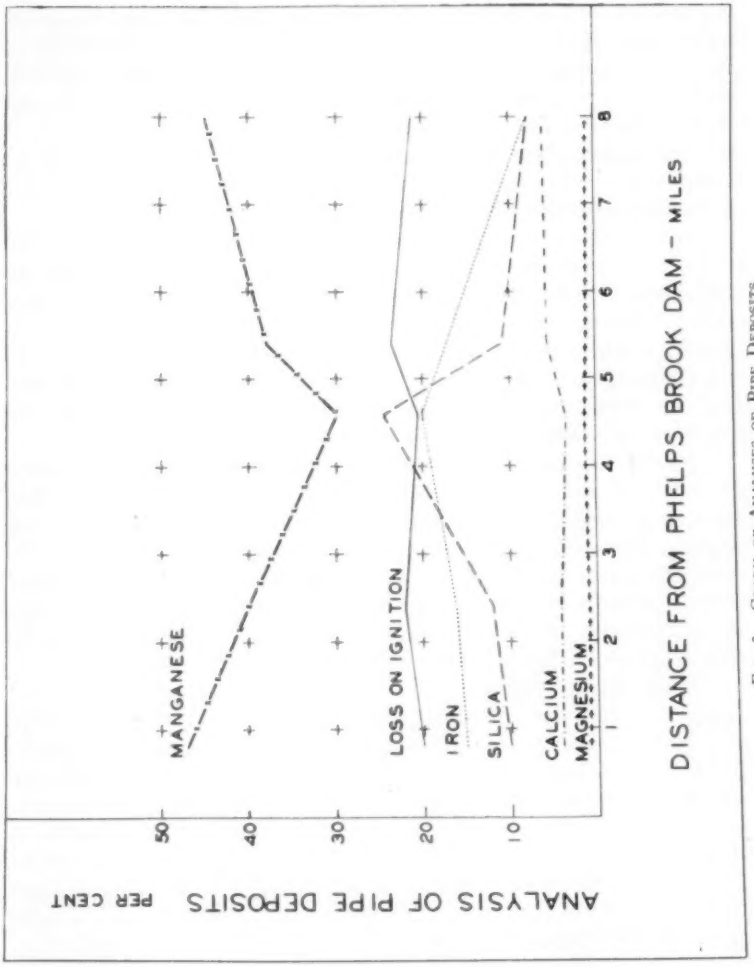

FIG. 2.—GRAPH OF ANALYSES OF PIPE DEPOSITS.

To check the probability that the manganese concentrations varied seasonally, we started to make monthly tests for manganese and iron on water in the Barkhamsted Reservoir, which is back of Saville Dam, taking the samples 30 ft below the water surface, on the same level as the intake which is generally used. The reservoir is about 120 ft deep at this point. Barkhamsted Reservoir was selected for these tests because, in 1947, the pipeline from this reservoir had been used very little and it had an excellent coëfficient of 149. Therefore, if there were to be any changes in its capacity, it was desirable to correlate them with changes in character of the water.

In addition, we wanted to find out if the iron and manganese were peculiar to our Nepaug Reservoir, which was about 30 years old then, or if they would also occur in the new Barkhamsted Reservoir. The operating procedure here is such that if a simple expedient like blowing off bottom water would prevent difficulties with the mains, we could find out by using this reservoir. Because of certain riparian rights, we are compelled to discharge some 13 billion gallons of water annually into the stream below the Barkhamsted Reservoir. As this water is used largely for power generation, these demands are met with bottom water. Barkhamsted Reservoir has a total capacity of 32 billion gallons. Therefore, an annual draft of at least 13 billion gallons from the bottom should minimize the effect of mixing bottom water with the rest of the reservoir during the turn-over periods.

The results of the analyses obtained under these operating conditions from 1947 through 1949 are shown in Figure 3. It is apparent that the iron and manganese concentrations vary with the seasons, the peaks occurring in the fall and winter months. There is a break in the record for the early part of 1949 because of a change in laboratory personnel.

In an attempt to find what caused the variations, there are plotted the curves of the temperature of the water, pH, alkalinity, carbon dioxide, iron and manganese. The carbon dioxide appears to have the same cycle as the iron and manganese, and the peaks occur in the vicinity of the turn-over temperature. A plot of the total algae count on this chart showed no similiarity to the pattern of the iron and manganese curves. There is the possibility that a count of the individual organisms might have shown some similitude. However, at no time

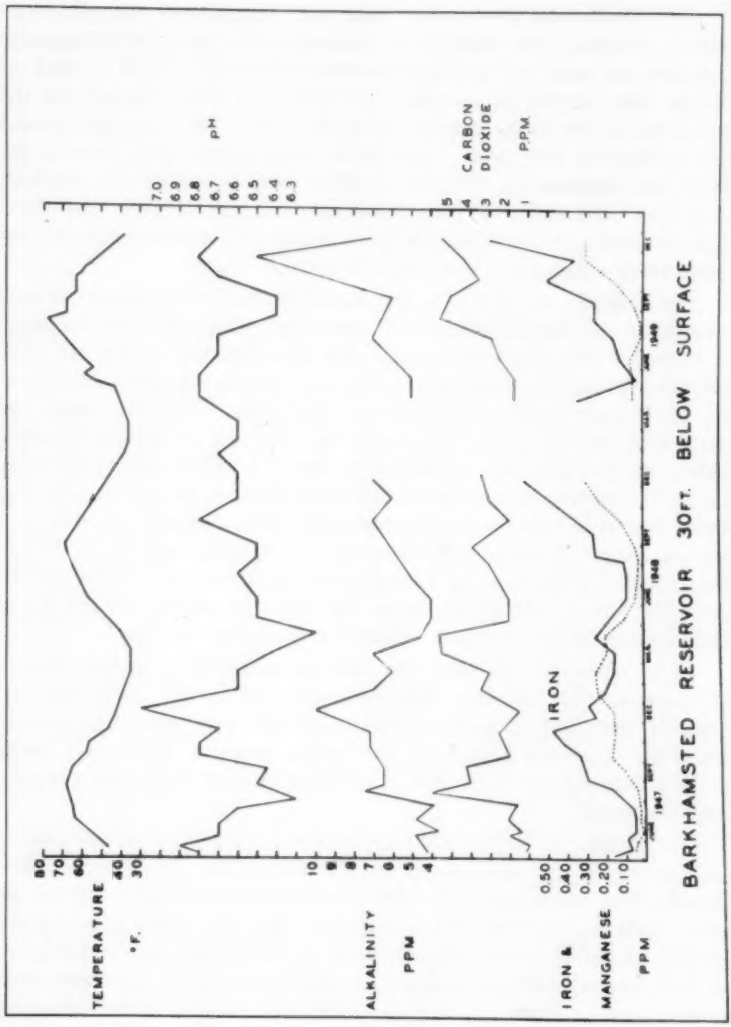
BARKHAMSTED RESERVOIR 30ft. BELOW SURFACE
TEMPERATURE °F.
80
70
60
40
30
pH
7.0
6.9
6.8
6.7
6.6
6.5
6.4
6.3
ALKALINITY PPM
10
9
8
7
6
5
4
CARBON DIOXIDE PPM
5
4
3
2
1
IRON & MANGANESE PPM
0.50
0.40
0.30
0.20
0.10
IRON
1947
1948
1949

Fig. 3.

were *Crenothrix* or *Leptothrix*, the organisms commonly known as iron utilizers, found in the water.

Because the carbon-dioxide curve seemed to bear some relation to the curves of iron and manganese, it appeared advisable to find out what happened to the carbon dioxide as the water flowed through the pipes. Samples were collected one day along the 36-inch concrete pipe at spaced time intervals, calculated to intercept the same unit volume of water as it flowed through the pipe. The following results were obtained:

Distance from source	Carbon dioxide	pH
At the reservoir	2.42 ppm	6.78
1 mile	1.47	6.95
2½ miles	1.30	7.06
7 miles	0.80	7.19

At the reservoir the iron and manganese increase with increases in carbon dioxide and in the pipelines, where the iron and manganese are deposited, the carbon dioxide decreases. However, carbon dioxide is probably not the sole cause of the pipe deposits. With manganese there is always the possibility of catalytic action, once some manganese is deposited. Moreover, the pipe deposits had a high percentage of organic matter, and whether this is a cause or an effect of iron and manganese deposits remains to be proved.

What can be done to restore the hydraulic capacity of mains fouled in this manner? We dosed a mile-long section of the 42-inch, cast-iron, cement-lined pipe below Phelps Brook Dam with 50 ppm of chlorine for eleven days and then flushed it at a velocity of 6 ft per sec for ½ hr, and obtained a highly-colored and turbid effluent. Similar flushing before chlorination had given a relatively clear water. Friction coëfficients before and after dosage with chlorine were 111 and 133, indicating a material improvement.

It was probably unnecessary to use a dose as high as 50 ppm, because there was a considerable amount of chlorine at the downstream end of the mile section of pipe being dosed. A visual examination of the interior of the pipe, after this treatment, showed there was a substantial reduction in the coating; however, it was not entirely removed. Although this dose of chlorine improved the hydraulic capacity of the

pipe, the single dose did not prevent a recurrence of the deposits. A test, made two years later, gave a Williams-and-Hazen coëfficient of only 102. This indicates that, once the interior of the pipe has been cleared, a program of continuous treatment is necesary to prevent deposit of iron and manganese on the pipe wall.

Our policy has been to observe the rate of change in the pipe coefficients, with the expectation that they will be stabilized at some point. The slower rate of deterioration in the past few years encourages this belief. At present, since there is sufficient capacity in the mains to take care of ordinary demands, the expense of a continuing maintenance program does not seem warranted.

The early stages of this investigation were carried out under the supervision and guidance of Caleb M. Saville, former Manager and Chief Engineer of the Water Bureau, and the more recent work was done under William A. D. Wurts, Manager of the Metropolitan District, and Warren A. Gentner, Chief Engineer of the Water Bureau.

ACTION OF OZONE ON WATER-BORNE BACTERIA‡

BY J. M. DICKERMAN, A. O. CASTRABERTI AND J. E. FULLER*

[*Received July 23, 1953.*]

For a number of years ozone has been used in a number of water-treatment plants in Europe for the destruction of water-borne bacteria (1). In order to obtain sufficient production of ozone with the equipment employed, the air must be cooled and water vapor and particulate material removed. This procedure necessitates the use of closed ozone generators, and the consequent cost of ozone generation has been too high to encourage its use for the treatment of public water supplies in this country instead of the less expensive chlorination process. Ozonation has been tried in a few localities in the United States, but its use is not common, and its principal application has been for the removal of tastes, odors and color from water.

Open ozone generators have not been used much because the production of ozone has been inefficient and has been accompanied by the production of hydrogen peroxide and oxides of nitrogen. In recent years, however, open generators have been developed which may overcome these objectionable features and provide an economical and efficient means for the treatment of municipal and rural water supplies.

An open brush-type ozone generator was made available to this laboratory through the courtesy of a near-by manufacturer.** Preliminary tests by the methods of Arnold and Mentzel (2), Erlwein and Weyl (3), and Eschbaum (4) indicated the presence of ozone and the absence of hydrogen peroxide and nitrous oxides in the atmosphere produced by the apparatus. Hence, the study here reported was undertaken to determine the possible bactericidal effect of ozone on bacteria commonly appearing in water.

Experimental

A spectrum of pathogenic and non-pathogenic bacteria, which may be found in water (5), was employed in these experiments. A

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** Norwood Filtration Co., Holyoke, Mass.

list of the cultures appears in Table 1. Various concentrations of each culture were suspended separately in 100-ml quantities of sterile tap water and subjected to the action of ozone in a glass tube that had a fritted glass disperser fitted into it. Ozone was drawn into the system by suction and dispersed into the bacterial suspensions as a fine stream of bubbles.

The bacterial suspensions were exposed to different concentrations of ozone, for different time intervals at 28°C. At the end of a desired time interval, 1-ml and 5-ml portions were withdrawn from the ozonated suspensions. The 5-ml portions were used for the determinations of residual ozone by generally accepted methods (6) (7). The procedure involved the absorption of the residual ozone in a neutral potassium-iodide solution to liberate free iodine, which was titrated with standardized sodium thiosulphate solution. Starch solution was used as the indicator.

TABLE 1.—THE EFFECT OF OZONE ON PURE CULTURES OF BACTERIA SUSPENDED IN TAP WATER

Organism	Smallest initial count in thousands per ml	Required ozone residual (ppm)	Required time of exposure (min)	Greatest initial count in thousands per ml	Required ozone residual (ppm)	Required time of exposure (min)
Staph. aureus	10	1.7	1	50	1.0	3
Staph. albus	20	0.95	1	55	2.0	1
Mic. citreus	25	1.0	1	45	1.2	1
Gaf. tetragena	52	1.5	1	1,000	1.5	1
Esch. coli	2.2	0.9	1	1,000	0.95	1
Esch. coli, var. communior	23	0.95	1	47	1.2	1
Aero. aerogenes	25	1.0	1	90	0.3	3
Aero. cloacae	1,000	0.5	1	1,000	0.4	3
B. subtilis	12	1.5	3	70	1.5	5
B. citreus	7	1.0	1	10	1.2	1
B. cereus	2	0.8	1	3	1.2	1
Sal. enteritidis	52	1.55	1	80	1.7	1
Sal. typhi	85	1.85	3	1,000	2.2	1
Ser. marcescens	50	Trace	1	90	Trace	1
Ps. fluorescens	10	1.3	1	95	1.5	1
Ps. aeruginosa	12	0.5	1	60	1.0	3

The 1-ml portions were placed in sterile petri dishes, which were agitated gently for several minutes to dissipate any residual ozone. Nutrient agar (Difco) was poured into the plates, mixed with suspensions, and allowed to solidify. The plates thus made were incubated for 48 hours at 37°C., and then colony counts were made. The concentration of ozone and the time necessary for complete killing were determined from these data for each organism employed. Table 1 is a composite table of results, in which are shown the minimum concentration of ozone and the minimum time required for complete killing in suspensions with the largest and smallest numbers employed for each organism.

To test the effect of ozone on the naturally-occurring bacterial flora of raw water, samples were taken from near-by streams and treated with ozone by the same procedure as was employed with the bacterial suspensions. Some of the samples gave high initial bacteria counts, as shown in Table 2, which shows also the concentration of ozone and the time required to reduce the bacteria counts to zero.

TABLE 2.—EFFECT OF OZONE UPON BACTERIAL CONTENT OF RAW WATER FROM STREAMS

Sample no.	Bacteria per ml, initial count	Required ppm ozone residual	Required time of exposure (min)
1	20	1.6	1
2	130	1.7	1
3	2,700	1.9	1
4	3,200	2.1	1
5	4,000	2.35	3
6	41,000	1.5	3
7	72,000	1.3	1

RESULTS AND COMMENT

The results obtained with the suspensions of bacteria indicated a marked bactericidal action by the ozone when negligible amounts of organic material were present. In every instance, except with *Bacillus subtilis*, a residual concentration of 2 ppm, applied for one minute, was capable of destroying the concentrations of bacteria employed. The larger concentration of ozone and the longer exposure time required for killing of *B. subtilis* possibly may be explained on the basis

that this is a sporulating organism and that the spores are more resistant than vegetative cells to the action of ozone. Fortunately, such organisms are of no sanitary significance in water.

Of the samples of raw water, represented in Table 2, samples 4 and 5 contained relatively large amounts of organic matter, and larger concentrations of ozone were required to destroy given numbers of bacteria than would have been required in the absence of organic material. Some of the ozone probably was bound by the organic matter present in the water and thus rendered unavailable for the killing of bacteria. These results indicate that, for best results, it is desirable that the water be treated to reduce the organic-matter content before treating it with ozone.

On the basis of the results presented here, a water-treatment installation would have to maintain an ozone residual of 2 ppm for at least five minutes to treat dependably raw water with a low content of organic matter. This residual is larger than that of chlorine commonly used. However, ozone readily oxidizes compounds in water that cause tastes and odors, while chlorine not only does not remove these compounds but reacts with them to cause tastes and odors that may be objectionable at times.

Additional experiments done in this laboratory, but not detailed in this paper, indicated that ozone is more effective than chlorine for controlling algae and protozoa in water. In one instance, 15 ppm of ozone applied for three minutes was capable of destroying a protozoan species that had resisted 250 ppm of chlorine for a much longer time.

The data presented in this paper are only indications of the possible value of ozone for water treatment. Further studies, with an open-type ozone generator actually operating as a water-treatment system, would be necessary to establish the effectiveness of ozone as compared with chlorine for the practical treatment of water supplies. The value of such studies seems to be indicated.*

Summary

The bactericidal action of ozone, generated by an inexpensive, open brush-type ozonator, has been studied with suspensions of pure cultures of bacteria and with the naturally-occurring bacteria of raw

* After this study had been completed, an article by Powell *et al.* (8), reported the use of ozone in a pilot water-supply plant. The main objective was the control of tastes and odors, but 99.4% reduction of coliform bacteria was reported.

waters from streams. With bacterial suspensions containing little organic matter, ozone was strikingly effective in killing the bacteria. With raw waters that contained a considerable amount of organic matter, larger concentrations of ozone and longer application periods were needed, because the organic matter appeared to inactivate some of the ozone. Results with raw water indicated that an ozone residual of 2 ppm, applied for at least 5 minutes, would be required to treat satisfactorily raw water of low organic content. Further studies under practical operating conditions would be desirable.

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INVESTIGATION OF THE CONTINUOUS RECORDING OF FLUORIDE CONCENTRATION IN WATER

BY KENNETH F. KNOWLTON*

[*Read September 30, 1953.*]

When it became known that the Salem and Beverly Water Supply Board was to commence with the fluoridation of its water supply, we were approached by The Foxboro Company, requesting our cooperation in a field trial of fluoride-concentration recording equipment, using an electrical Conductivity Difference Recorder. Our plant was considered appropriate for this trial by location and because the plant is constantly attended and has adequate laboratory facilities.

An adaptation of the use of electrical conductivity is the basis of the method of fluoride recording which was used in this study. We all know that when salt is added to water an electric current will pass through the water more easily than it would without the salt. Any material which ionizes in water will show this same characteristic to some extent, and instruments have long since been developed to measure minute changes in the electrical conductivity of water. Procedures and definitions have been adopted for discussing these phenomena.

Electrical conductivity is the reciprocal of electrical resistance or one divided by resistance expressed in ohms $\frac{1}{\text{ohm}}$. The word "mhos" (ohms backwards) is used to express units of conductivity. Specific conductivity is the conductivity at a given temperature of the material under test, as measured by two platinum plates, each one square centimeter in area and placed one centimeter apart. Since the conductivity is usually low (resistance high), we normally speak of "micromhos," or units of millionths of a mho.

In the measurement of fluoride, arrangements are made to determine the specific conductivity of the water before fluoride addition and again after the addition of the chemical. At Salem-Beverly the

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base conductivity of the water is in the order of 145 micromhos at 25° C.

Since both sodium fluoride and sodium silicofluoride ionize in water, there is a change in the conductivity of the water when they are added. If the measurements are delicate enough and all other factors, except the added fluoride, can be eliminated, we have a good method for adaptation to continuous analysis for the amount of the material which is added to the water. The remainder of the paper will describe the particular equipment we used and the results obtained.

In practice, other materials than platinum are used in the construction of cells. The cells in this application are constructed of carbon and are illustrated in Fig. 1. These cells consist of two carbon electrodes of fixed characteristics, so mounted that they are rugged and can be inserted through a 1¼-inch valve in the side of a pipe. They are designed to stand pressures up to 150 psi. Two cells are needed in each installation, as has been mentioned earlier.

FIG. 1.—ELECTRICAL CONDUCTIVITY CELL, INSERT TYPE (*Courtesy of The Foxboro Co.*)

An instrument has been devised which imposes a 1,000-cycle electric current upon both cells and then measures the conductivity at one cell against that of the other. Through suitable electronic amplification, the difference in electrical conductivity at the two cells is converted to mechanical motion of a pen arm, this giving a continuous record of the difference in micromhos due to the added fluoride salt.

Since conductivity is also related to temperature, it is important that both cells operate at the same temperature or at constant temperature differential. This requirement was considered easy to meet in water-works practice. However, in order to have proof, we installed temperature bulbs with each conductivity cell and connected these to a Temperature Difference Recorder.

Both recorders were mounted in a suitable cabinet, located in the laboratory (Fig. 2). The lower case holds the temperature recorder and the upper unit is the fluoride recorder.

The Salem and Beverly Water Supply Board chose sodium silicofluoride as the material to use in treating its water. The Board also selected a Wallace & Tiernan Type A-635 Volumetric Fluoridizer, equipped with a 40-gal solution chamber.

Application of the fluoride solution from the feeder was to be into the pipeline carrying the filter effluent to the clear-well. This pipe is 30″ diameter cast iron, is about 100 ft long from the last filter connection to the reservoir, and contains in its length one ¼ bend and one 1/16 bend. It terminates in an upturned elbow at the clear-well.

Since we planned the fluoride-recorder installation along with our original fluoride equipment, the application point in this pipeline was carefully chosen. We already had points for the application of lime, ammonia, chlorine, and polyphosphate in this line. The ammonia was not being used. The possible effects of all of these on the fluoride measurements must be eliminated. Lime, being fed as a slurry was the major problem. Its application point was moved ahead of the filters with no apparent adverse reactions. The polyphosphate and chlorine were both moved to points ahead of the two bends in the pipe, to cause good mixing.

There was a manhole available at a point 60 ft from the discharge end of the pipe. Here we installed the low-conductivity cell and a temperature bulb, and at a point about 1 ft downstream we

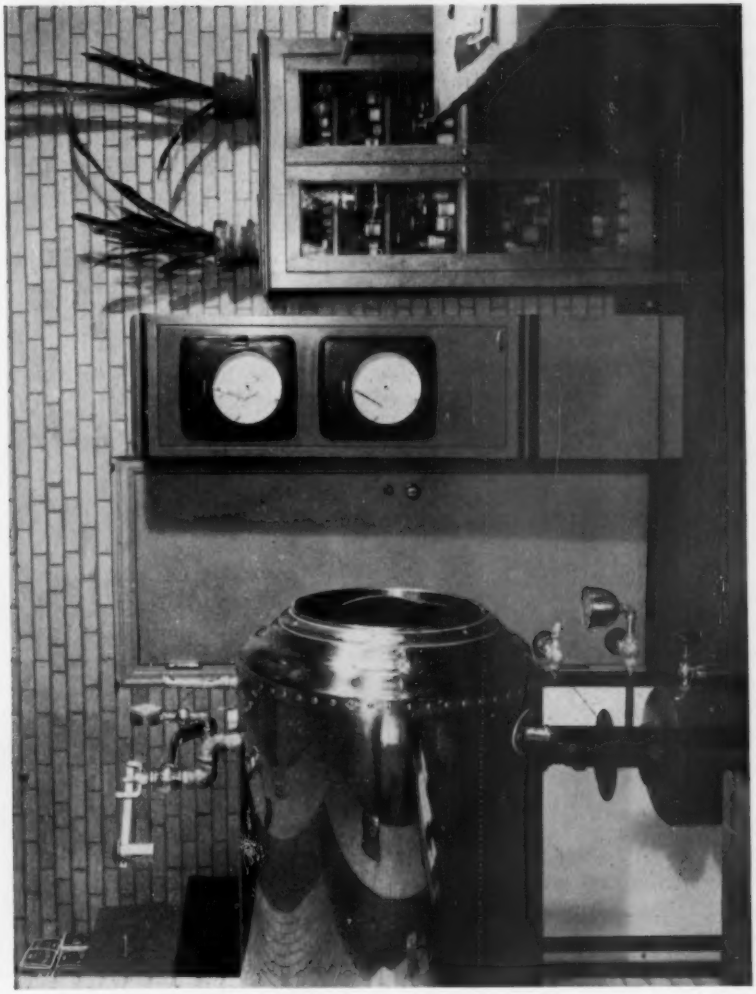

FIG. 2.—FLUORIDE-CONCENTRATION RECORDER INSTALLED IN LABORATORY.

installed the fluoride-solution feed hose. This installation was the best we could do by way of eliminating all effects except fluoride—the water supposedly being stable and finished at the low-conductivity electrode cell, except for the addition of the fluoride salt. Fig. 3 shows these connections and an old sample line in the manhole.

Location of the high-conductivity cell was restricted to the discharge end of the pipe. It was hoped that the fluoride would be thoroughly mixed in the water after passing through 60 ft of straight pipe and into the terminal bend.

The first trial involved the installation of a sampling line from this bend, through a small centrifugal pump, to a chamber at one of the laboratory sinks. The conductivity cell and temperature bulb were located in this chamber. Due to the rise and fall of the reservoir, there was a variable rate of flow through the sample line. Coupled with some priming problems, this produced inconsistent results.

Rather than try to iron out the problems with this line, we relocated the cell for high conductivity directly in the stream emerging from the filter-effluent line.

Fig. 4 shows this installation and the sampling line which is now used for catch samples only. Fig. 5 illustrates the complete set-up.

As we received the instrument and have been using it, the calibration is in micromhos of conductivity difference at the two cells. We were furnished a chart to convert these values to fluoride added to the water. Several chemical tests were run and computations made, and the sum total of these seemed to fall to one side of the original curve. This led to much more extensive calibration studies in The Foxboro Co. laboratories and they are being presented in a discussion of this paper.

Of primary interest was the effect of treatment-plant processes upon the reliability of the instrument. The one material fully expected to give trouble was the lime. Fortunately for our work, the pH of the filtered water reached a point where lime was not needed, just at the time we started this test. We took advantage of this period by experimenting for short periods with lime fed following the filters. The lime slurry being incompletely dissolved as it passed the electrodes, very erratic results occurred in the charts—the pen arm fluctuating violently and barely staying within the limit of the chart.

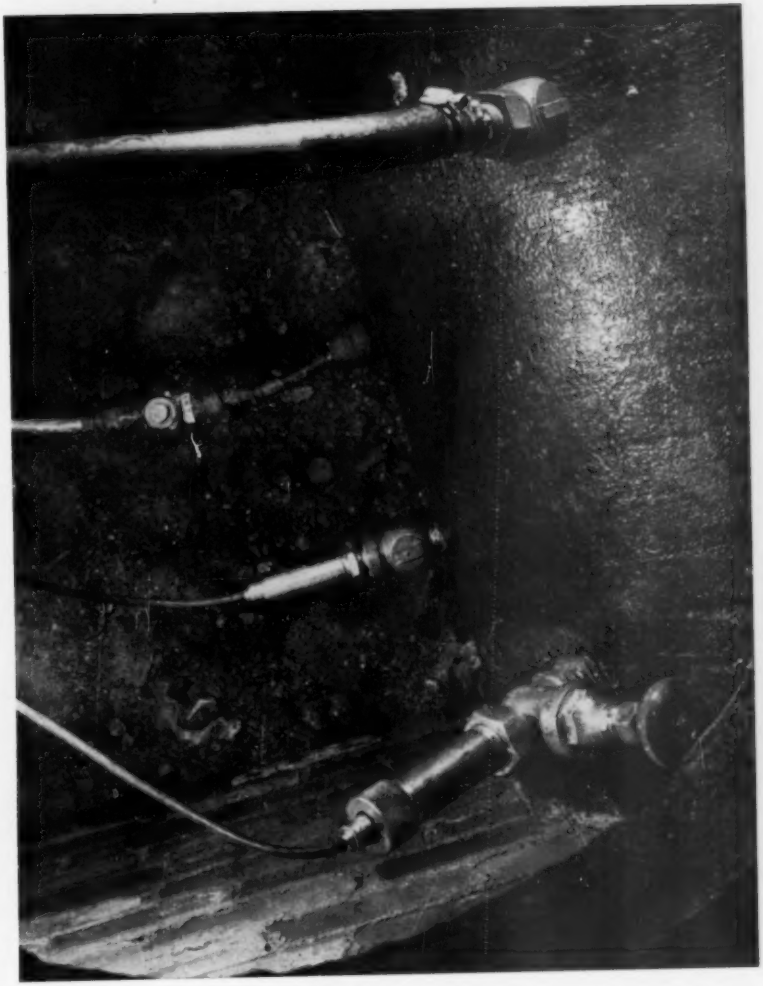

FIG. 3.—FILTER-EFFLUENT PIPE, FLOW FROM LEFT TO RIGHT.
Connections from left to right are: cell for low conductivity; temperature bulb; discontinued sampling line; sodium silico-fluoride application line.

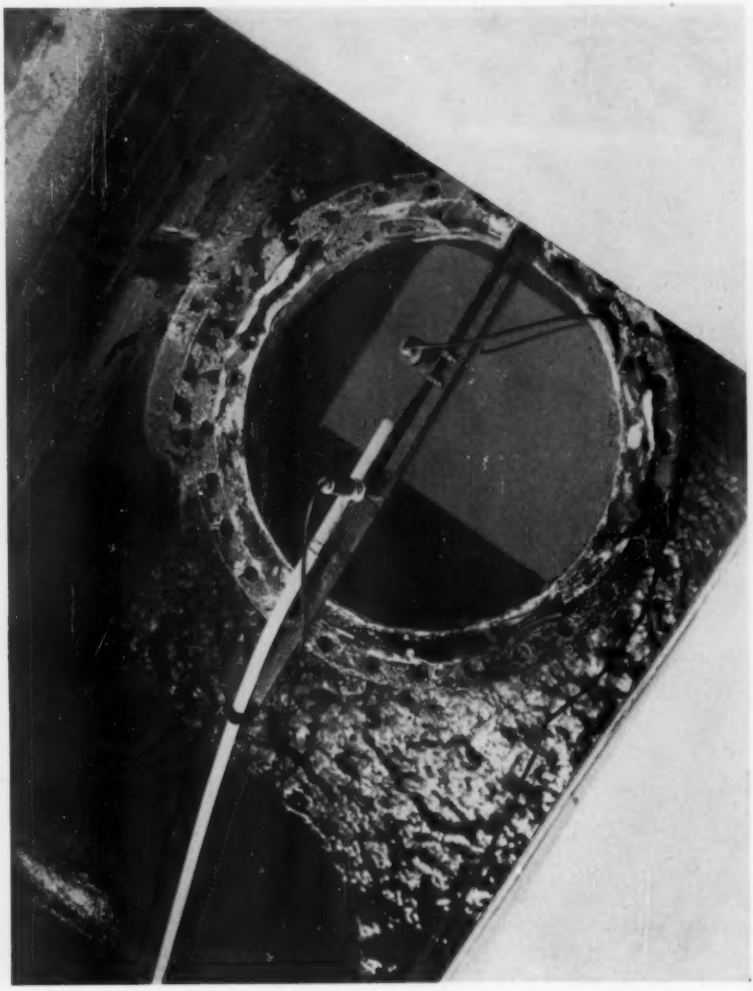

FIG. 4.—FILTER DISCHARGE AT CLEAR-WATER RESERVOIR.
Sample line to laboratory, ¾" I.D. plastic tubing (*Carlon*); temperature bulb; cell for high conductivity.

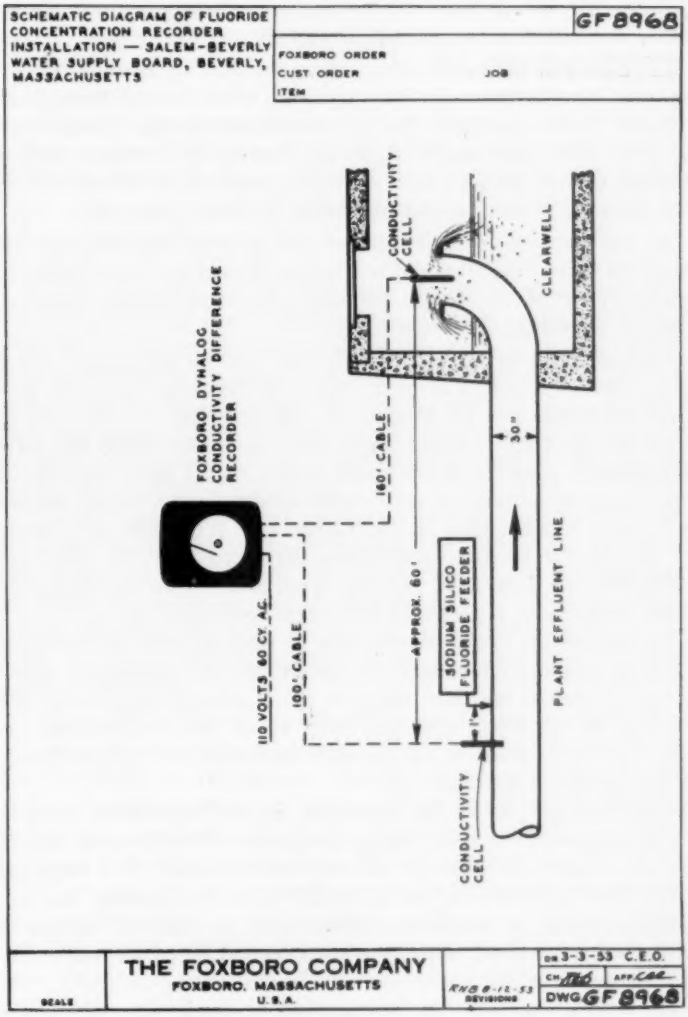

FIG. 5.—SCHEMATIC DIAGRAM OF FLUORIDE-CONCENTRATION RECORDER.

When the use of lime again became necessary, it was applied ahead of the filters, as mentioned previously.

Chlorine was not expected to affect the fluoride reading, since it would pass rapidly into solution, especially when flowing through the two bends in the pipeline. On two specific occasions, changes were made from post-chlorination to pre-chlorination and reverse with no significant change on the chart readings, except for a short-lived dip or rise for the few minutes of stabilization between electrodes.

As was mentioned earlier, it was noticed that the conductivities observed at this installation did not fall on the calibration curve available at the start of the study. The discussion of this paper will cover the factors affecting calibration curves.

Another effect we have noticed is that of a "drifting zero". From time to time there seems to be a change in the basic reference point so that, when the fluoride is shut off, the pen does not land on the zero mark, but may be either appreciably above or below the mark. This difference may be in the order of 0.1 or 0.2 ppm fluoride. So far, the cause is unknown, but it is presumed to be something inherent in our process, rather than in the instrument. When the same instrument was used in another installation, described later, the effect was not noticed, and when fixed resistors were attached to the instrument in place of the cells, a perfectly true circle resulted.

In spite of not being always able to read fluoride accurately off the charts, pending more data on calibration, the instrument gave a good steady record and was sensitive to all changes in fluoride concentration. When filters were cut on or off, or the plant-effluent rate changed for other reasons, the recorder indicated even slight changes in concentration of fluoride.

This fact has made the operation of our fluoridation program more manageable, since we have a continuous record which quickly shows any major change in the fluoride concentration. The variations and interferences discussed are generally slow and gradual and of a magnitude which is relatively unimportant in over-all dosage requirements at our plant, where we have several hours' detention time in the clear-well.

On several occasions, we have picked up feeder irregularities almost immediately. The chief one of these has been the stoppage of

the solution-pot agitator from time to time—sometimes because an operator forgets to turn on the water; once when a piece of paper plugged the valve, and once or twice for reasons which were not determined.

It also helps to readjust the fluoride rate easily, when changes are made in the plant flow rate for short periods of time—say, two to four hours. These changes are usually made to service a pump or perform other maintenance work. Nobody wants to stop and figure precise new settings for all the feeders in the plant at such a time.

During the course of our studies, several attempts were made to discover the cause of the hunting of the pen on the chart. Some of this is expected in a sensitive instrument, but we wished it to be a minimum. Most of the chemical feeders have a cycling action and there can be some cycling of the filter effluents, all of which can be reflected on the fluoride chart. In this phase of the study, a 24-minute clock was placed in the instrument, to stretch out the fluctuations on the chart. We were unable to pick up any definite cycle or to find any single cause for the hunting.

At this point, we asked the Danvers Water Department for permission to install the instrument at their pumping station, where the only treatment of the pond water was fluoridation and chlorination, and they were widely separated, with fluoridation preceding the pumps and chlorination following the pumps. This permission was readily given and full coöperation was granted us during the weeks of the run at their station.

After several weeks of operation, the 24-minute clock was used and four sample charts are shown in Figures 6 to 9, inclusive. Fig. 6 shows a perfectly smooth zero line, which was characteristic at Danvers, followed by a rapid rise to about 1.5 micromhos when the fluoride feeder was turned on. Fig. 7 shows the rise to about 3.0 micromhos when the feed rate was doubled. The fluctuations here became somewhat greater. Fig. 8 shows the return to normal when the feed rate was again reduced.

Fig. 9 shows the return to zero when the feeder was shut off. This chart also shows the value of the recorder in operation. At about the 7 PM mark, the fluoride feeder was turned on and nothing happened. The instrument was in the pumping station, as were the water and

power switches for the feeder, but the feeder was in the gate-house outside, and not visible. Upon checking, it was found that electricity to the feeder was turned on, but not the water to the solution pot.

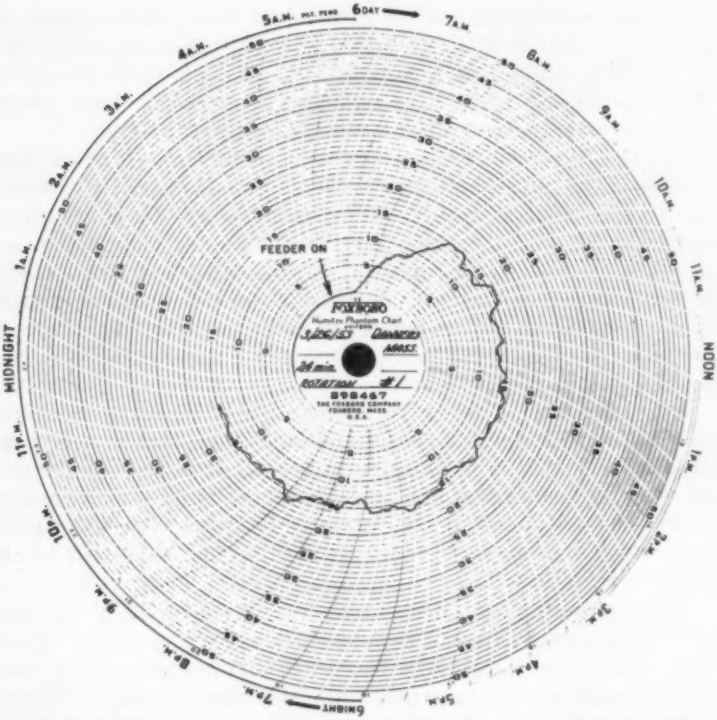

FIG. 6.—FIRST CHART OF A CONTINUOUS SERIES—TEST RUN WITH 24-MINUTE CLOCK. Each hour division on chart equals 1 minute. Calibration in conductivity difference.

When this was turned on, there was a rapid rise in the fluoride concentration, due to the extra material in the solution pot. This gradually leached down to the normal dose at about 1.5 micromhos.

The steady zero and much slower hunting rate at this installation definitely indicated that it is effects from the process at Salem-Beverly

which cause much of the irregularities in the measurement. However, this same sensitivity causes immediate reaction to treatment changes.

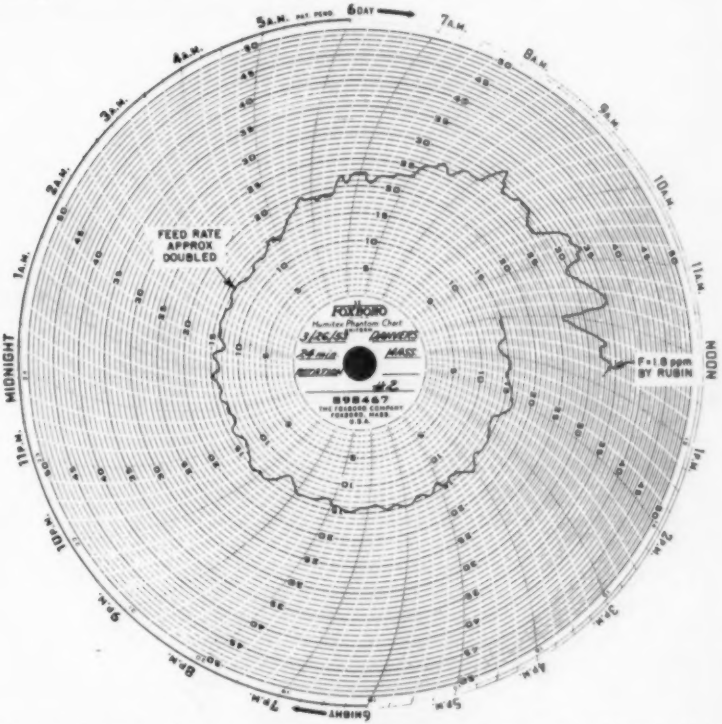

FIG. 7.—SECOND CHART OF A CONTINUOUS SERIES—TEST RUN WITH 24-MINUTE CLOCK. See Fig. 6.

In conclusion, it should be emphasized that this is more of a progress report than a completed one. Considerable information, however, has been gathered during the ten months of operation.

Several advantages are apparent in this method of fluoride-residual recording. There is a constant record of the added fluoride, which to date is not a perfect record, but nonetheless is a record which

very easily shows hour-to-hour, and even minute-to-minute, changes in fluoride concentration. The equipment appears to be reliable, virtually no trouble being had after it was once placed in full operation.

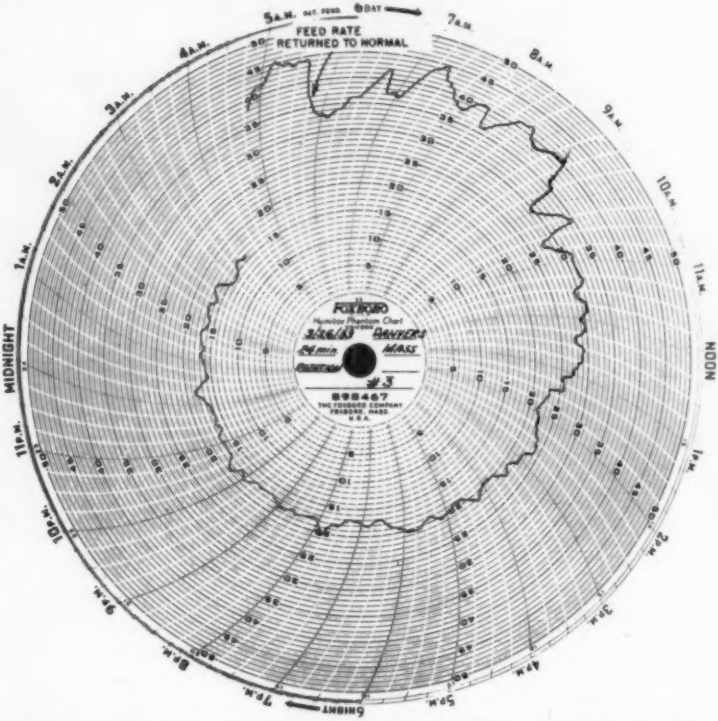

FIG. 8—THIRD CHART OF A CONTINUOUS SERIES—TEST RUN WITH 24-MINUTE CLOCK. See FIG. 6.

We did burn out tubes in the unit early in the work, but this was apparently due to the shaking they got in transit. Replacements were available at the local radio store. We have also blown two fuses in the instrument, apparently due to poor connections in the temporary extension cords used for power. These fuses are special and should be stocked at the plant.

Apparently the instrument is extremely reliable where only fluoridation is in use, as at Danvers, and in our run there, readings from the chart were probably more accurate for fluoride content than the usual chemical analysis would be.

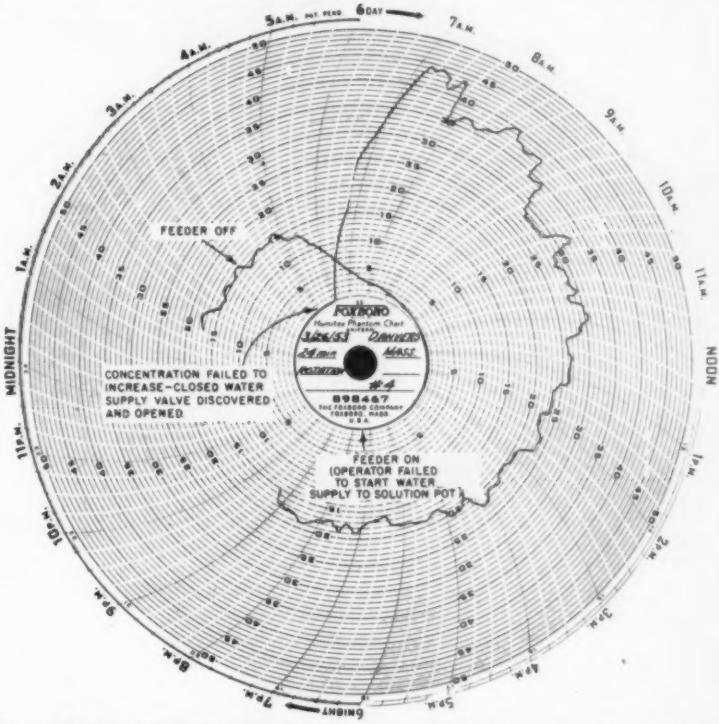

FIG. 9.—FOURTH CHART OF A CONTINUOUS SERIES—TEST RUN WITH 24-MINUTE CLOCK. See Fig. 6.

We hope to track down enough data to make the chart record better than the chemical analysis record at the Salem-Beverly Filter Plant. We are also considering the use of the instrument for actually controlling the fluoride feeder.

Figures 10 and 11 reproduce typical operation charts from Dan-

vers and Salem-Beverly. Figure 12 is a chart from Salem-Beverly, showing the plant-effluent fluoride concentration in micromhos on a day when trouble was being experienced with the water supply to the

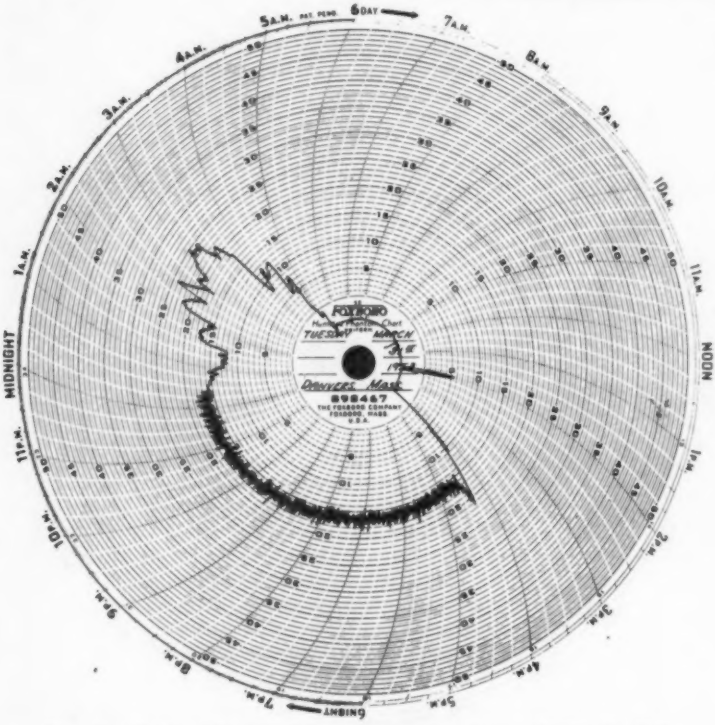

FIG. 10.—FLUORIDE-RESIDUAL RECORD, DANVERS, MASS., MARCH 31, 1953. Only significant period is period of operation from 4 p.m. to midnight. Calibration in conductivity difference.

solution pot. The trouble was eventually eliminated when a loose piece of packing material was found lodged in a valve on the piping system. On the same day there were two occasions when the effluent flow was heavily reduced at the time of washing filters and no adjustment was made in the fluoride feed rate.

This chart indicates a busy day and a sensitive record. It also shows that extensive operation upsets do not have a serious effect upon the overall quantity of fluoride contained in the finished water.

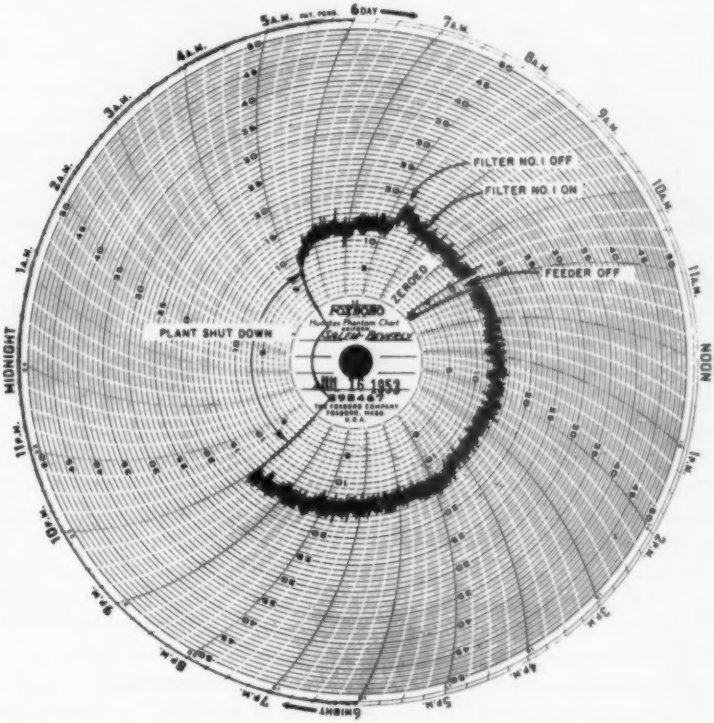

FIG. 11.—FLUORIDE-RESIDUAL RECORD, SALEM-BEVERLY, MASS., JULY 16, 1953. Calibration in conductivity difference.

In this entire day the maximum actual fluoride dose was in the order of 4 ppm for about 15 minutes.

The writer wishes to acknowledge the coöperation and assistance of the members of the Salem and Beverly Water Supply Board, and also of Mr. Russell and Mr. Holzel, Superintendent and Pumping

Station Engineer, respectively, for the Danvers Water Works, for their part in the study.

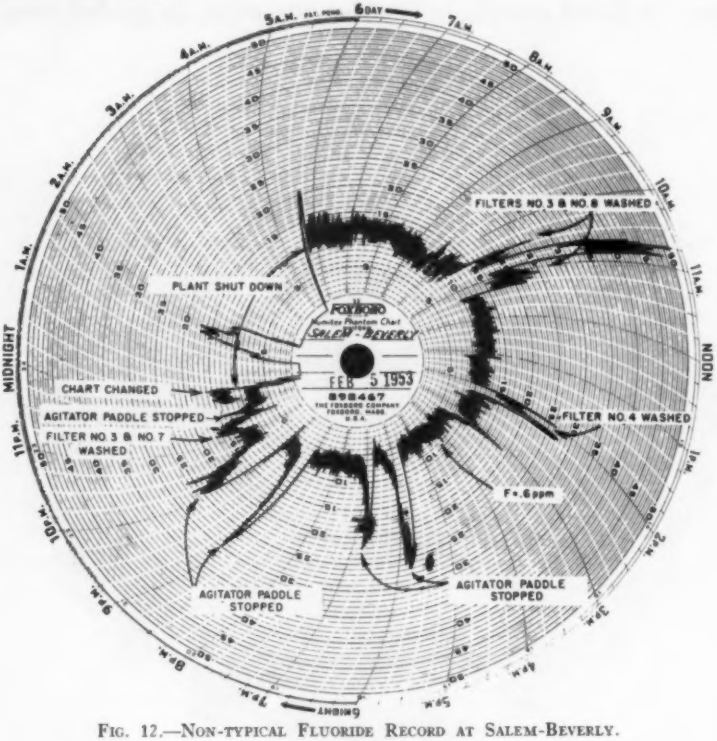

FIG. 12.—NON-TYPICAL FLUORIDE RECORD AT SALEM-BEVERLY.

DISCUSSION

RUSSELL H. BABCOCK AND JOHN G. DOBSON.*—Mr. Knowlton's excellent paper, outlining the operation results of the first 9 months of operation of this new method of continuous recording of fluoride additions to public water supplies, indicates that the method offers possibilities as a highly sensitive operating guide for the additions of fluorides to public water supplies.

* The Foxboro Co., Foxborough, Mass.

Further work must be done before any assurance can be felt with regard to the method as an accurate measurement of fluoride concentration. However, as an operating guide for the control of fluoridation, it has proved its value.

We wish to emphasize some of the limitations of the general method of conductivity difference which have already been mentioned by Mr. Knowlton.

Since the electrical conductivity of all salts has a substantial temperature coëfficient and since the method is looking at small differences of fairly large base conductivities (in the case of Salem-Beverly approximately 100 to 150 micromhos), any variation in temperature from the point of initial measurement before the addition of fluoride to the final measurement after the addition and mixing of fluorides in the water will introduce substantial errors. In ordinary water-works practice, this limitation probably does not offer any particular problem, but the installation of equipment of this sort should definitely guard against any possibility of changes in excess of a few hundredths of a degree Fahrenheit between the two points of measurement.

Small temperature difference, if constant, is virtually eliminated by the field zeroing of the instrument at the time of the initial setup.

Since the measurement is dependent upon the change of electrical conductivity due to the addition of fluorides, no other material must be either introduced to the water or transferred from an undissolved to dissolved state between the point of the initial reference measurement and the final measurement. Some careful planning of additions of lime, chlorine, phosphate and other additives must be made if this requirement is to be met in operating practice. Probably the most difficult requirement is that the previous additives, particularly lime, be completely dissolved in the water before the reference electrode is reached.

When this method of measurement was first conceived by the senior author of this discussion, preliminary tests were run in the laboratories of The Foxboro Company to determine the probable calibration curves of changes of electrical conductivity with variation of concentration of fluorides. Tests were run on both sodium fluoride and sodium silicofluoride in Foxboro tap water and the calibration curves drawn for those materials. It was found that in the ranges of

concentration of interest for public health work these lines plotting differential conductivity against fluoride concentration were virtually linear.

After the initial installation at the Salem-Beverly Water Supply, small discrepancies were found between the calibration curves that had been established at the Foxboro laboratories and tests on the Salem-Beverly Water Supply.

The discovery of these small discrepancies led to further intensive work on the determination of proper calibration curves of conductivity difference against fluoride concentrations.

Initial preliminary studies indicated that variation of the pH of the raw water might have a substantial effect on the calibration of the measurement and, in order to evaluate this effect, careful studies were made on buffered distilled water, a sodium phosphate, sodium diphosphate buffer system being used. In this series of tests the buffers were maintained at as low values as possible consistent with maintenance of pH and total buffer did not exceed 40 ppm. The region examined varied between pH 6 and pH 8. These tests were run on sodium silicofluoride. In the area of the detailed study between pH 6 and pH 8, no pH effect was observed within the accuracy of the methods used. However, at pH's below 5.5 substantial deviations are to be found due, apparently, to a change in the dissociation of sodium silicofluoride in the acid regions. No investigation has been made at pH's above pH 8.

A similar investigation of a system involving a Foxboro tap water, the phosphate buffer system, and sodium fluoride showed no shifts of calibration with pH even in the acid regions.

Apparently this is true since the dissociation mechanism is virtually fixed down to pH 5. At extremely acid conditions there are changes which are calculable on the basis of dissociation constants. Since hydrofluoric acid is an extremely weak acid, such phenomena are to be expected.

The next step in the investigation involved the determination as to whether mineral content in the water would have any substantial effect on the calibration curve. In order to evaluate this, calibration curves were run on Foxboro tap water and on Salem-Beverly water, and in each case the pH in the samples was observed, in order to per-

mit comparison with the phosphate buffered distilled waters previously run. A comparison of the three calibration curves is shown on Fig. 13.

It will be noted that there is a variation in the calibration, apparently due to the mineral content of the various waters. This variation of calibration with variation of mineral content of the natural waters has not been observed in the case of the addition of sodium fluoride. It is felt that the variation of calibration of the sodium silicofluoride is probably due to natural silica concentrations of the water, although sufficient laboratory work has not yet been done to verify this supposition. In view of this variation in calibration, it is the feeling of these authors that where sodium silicofluoride is used as a source of fluoride for addition to public water supplies, individual calibrations based on actual natural waters will probably be required.

Since sodium silicofluoride contains silica and upon dissociation appears as SiO_2, the possibility of interference from Si initially present occurred to us. Investigation reveals that there is a possibility that differences in the calibration curves may be due largely to SiO_2 initially present. Because physical and chemical data on the silica ion are virtually nonexistent, efforts to calculate this effect have been unsuccessful. From the data available and the limited work possible, we believe that, with the availability of these basic data, calculation of the silica effects will be possible.

It should be realized that the variation between various waters noted, due to mineral content, is often still within the limits of accuracy of measurement of fluoride concentrations by most of the standard chemical methods. Since the instrument can be easily read to 0.1 ppm, variations in calibration which would not be noticeable in routine plant determination for fluoride concentrations can be determined by this method.

All the laboratory work upon which the above curves are based has been performed at 25° C., because of the convenience of operating at this temperature. The measurement of fluorides by conductivity difference does have a temperature coëfficient which is approximately 2.2% per °C. In actual plant practice this correction can be built into the instrument, either for automatic temperature compensation or for manual temperature compensation, which is probably more applicable in view of the relatively stable temperatures to be found in average public water supplies.

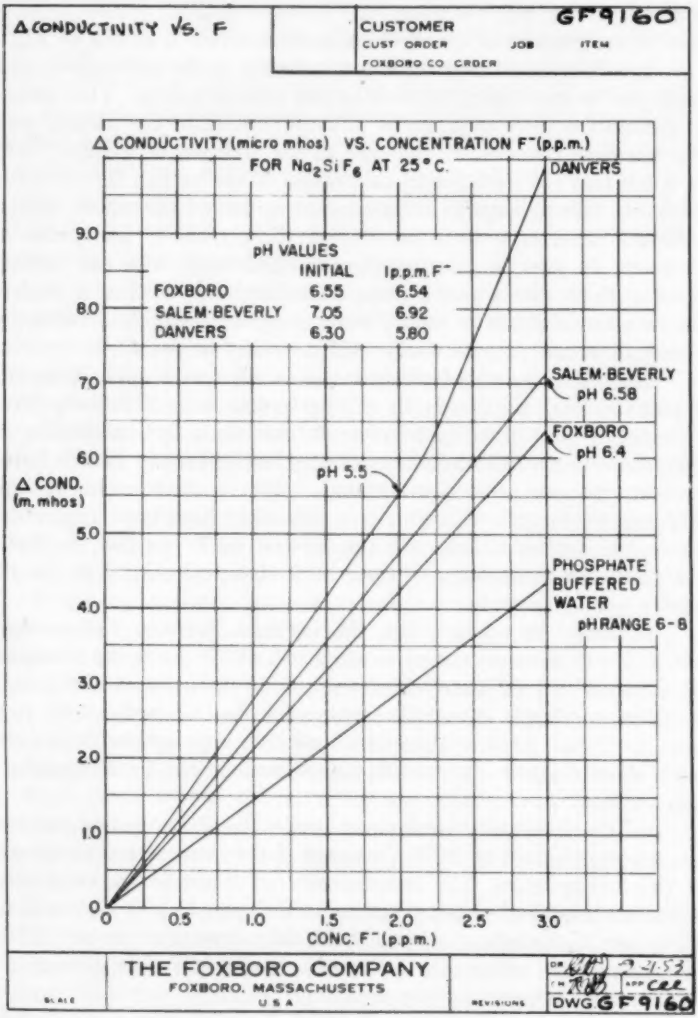
Δ CONDUCTIVITY VS. F
CUSTOMER
CUST ORDER JOB ITEM
FOXBORO CO ORDER
GF9160
Δ CONDUCTIVITY (micro mhos) VS. CONCENTRATION F⁻ (p.p.m.)
FOR Na_2SiF_6 AT 25°C.
DANVERS
pH VALUES
INITIAL 1 p.p.m. F⁻
FOXBORO 6.55 6.54
SALEM-BEVERLY 7.05 6.92
DANVERS 6.30 5.80
SALEM-BEVERLY pH 6.58
FOXBORO pH 6.4
pH 5.5
PHOSPHATE BUFFERED WATER pH RANGE 6-8
Δ COND. (m. mhos)
0 1.0 2.0 3.0 4.0 5.0 6.0 7.0 8.0 9.0
0 0.5 1.0 1.5 2.0 2.5 3.0
CONC. F⁻ (p.p.m.)
THE FOXBORO COMPANY
FOXBORO, MASSACHUSETTS
U.S.A.
SCALE
REVISIONS
DWG GF9160

FIG. 13.

It should be emphasized that the laboratory techniques for making the calibration curves are such that they cannot be performed routinely in normal, well-equipped water-works laboratories.

In addition to the limitations involved in the installation of this equipment and involved in the basic chemical calibrations as outlined above, there are certain other limitations which are introduced by the electrical circuits involved in the measurement of the conductivity difference. In most cases these errors are of academic interest only to the average user of this type of equipment. However, so that a full understanding of the limitations may be available, we are outlining every known source of interference with this measurement.

The instruments are built for measurement of differential conductivity of a given range, to cover the particular desirable range of fluoride addition for operating at a given base conductivity or conductivity of the finished water before fluoridation. Deviations from these absolute values will cause some potential errors. For instance, of an instrument built for a base conductivity of 100 micromhos, which approximates the initial condition found at Salem-Beverly, and an instrument built for a range of 0-2 ppm fluoride addition of sodium silicofluoride, errors of approximately 1/10 ppm fluoride would be found if the base conductivity varied to a minimum of 75 micromhos or to a maximum of 150 micromhos. At extremely high base conductivities such as may be found in high saline waters, the accuracy of the measurement is not impaired, provided the instrument is calibrated for the particular base conductivity. However if wide variations of the base conductivity are found substantially higher errors than the case outlined above will be found. These errors are readily calculable and the instrument can be built to measure the base conductivity, and therefore correction curves can be applied if desired.

Obviously, if the method is to be satisfactory, particularly on high base-conductivity waters, the cell constant for the two conductivity cells must be identical at all operating temperatures. Present manufacturing methods hold cells to such a degree of accuracy that any errors due to this are of second order.

While we have pointed out a number of limitations and potential sources of error in this method, and while we definitely feel that further field evaluation is indicated before definite conclusions are

reached on this method, we do feel that a satisfactory, highly sensitive and useful tool has been developed, which will be of service to the operating water-works engineer.

The tool which has been used in these experimental installations, mainly highly sensitive conductivity-difference instruments, may well be used for accurate measurement and control of the additions of other treating chemicals, both in the case of fluorides and other chemicals, once the measurement has been firmly established. Control of dry or liquid feeders directly from the instrument is a simple and straightforward engineering step.

We wish to acknowledge the assistance of Professors Edward W. Moore and J. Carrel Morris of Harvard University in explaining the pH effects, and express our thanks to Samir Haddad, Chemist, The Foxboro Co., for his performance of the laboratory work and interpretations of the results.

REPORT OF COMMITTEE ON RAINFALL AND YIELD OF DRAINAGE AREAS, SEPTEMBER, 1953

RAINFALL IN NEW ENGLAND

PART I. RAINFALL IN MASSACHUSETTS

The subject, "Rainfall in New England," is here presented as a continuation of a series of tables published in the JOURNALS of the New England Water Works Association.

The earlier tables of the series were prepared by the late X. H. Goodnough and were published in the JOURNALS as follows: Vol. 29, No. 3, 1915; Vol. 35, No. 3, 1921; Vol. 40, No. 2, 1926; and Vol. 44, No. 2, 1930. Later tables were prepared by George V. White and published in Vol. 56, No. 4, 1942; Vol. 57, No. 1, 1943; and Vol. 57, No. 3, 1943.

Mr. Goodnough's first paper, which was received with much favorable comment, contains not only original tables of the monthly and annual rainfalls and their averages for all known stations through the year 1913, but also some 38 pages of text, a carefully prepared map of lines of equal rainfall, original diagrams showing the 3-year progressive average for the long-term composite record for Eastern Massachusetts and for New Bedford, and diagrams of the average monthly rainfall at various long-term stations in New England.

Mr. Goodnough's second paper includes a continuation of the station records for the period 1914 to 1920, inclusive, and gives monthly and annual averages for the entire period of record. His third paper covers the period from 1921 to 1926, inclusive, and presents many records not shown in the earlier papers, some 82 records having been added since publication of the first paper.

In his fourth and last paper, the monthly and yearly rainfalls, together with their averages for the entire period of record, are given for all stations previously included and for many additional gages. These tables cover 190 pages and show an increase of 216 stations in New England since publication of the first paper.

The following paragraphs, quoted from the introduction of Mr. White's paper, provide certain historical data and indicate the scope of his tables:

"In the present paper, a somewhat different form of presentation was thought necessary, because of the mounting volume of information. The maximum and minimum monthly and yearly rainfalls and their year of occurrence are given for each station prior to 1929. In order to have the complete record of any gage it is necessary to have at hand a copy of Goodnough's last paper (Vol. 44, No. 2, June, 1930). Many complete station records through the year 1930 are to be found also in 'Climatic Summary of the United States,' Sections 84, 85 and 86, published by the United States Weather Bureau. Except for comparatively new stations or an occasional revised record, the period of record in the present paper is 1929 to 1941, inclusive, and monthly and annual averages are given for this period for each station through the year 1938.

"Previous to 1883, the collection of rainfall records was, in many cases, a part of the duties of various governmental agencies, situated at widely separated locations, reporting in general to the U. S. Signal Service. There were also some private and voluntary cooperative stations. With the founding of the New England Meteorological Society of Boston in 1883, many new stations were established in New England, and valuable monthly reports were published. The Society's observers were generally voluntary observers and were left free to use any approved gage at their disposal. There was no standard method of recording. Some observers, for example, measured the snow depth in inches, and their observations were later converted to inches of water in the Society's headquarters by assuming that ten inches of snow equal one inch of water. In March, 1890, the work of the Society was taken over by the New England Weather Service of the U. S. Weather Bureau in the Department of Agriculture, and this body, for several years, maintained the Society's practices of rainfall recording. Gradually the stations, perhaps because of their voluntary nature and because of lack of inspection and interest, reached a low level of efficiency, as the author found when, in 1912, he was assigned to inspect every rainfall station in Massachusetts. A few cooperative stations in each of the other New England States were also visited and

similar conditions were found to obtain there. It was discovered that there were large areas within the State of Massachusetts, including watersheds of great importance to water supplies, that had no rainfall records, and a plan was worked out whereby the State Department of Public Health undertook to place at least one rain gage on the watershed of nearly every stream with a catchment area of 25 square miles or more. Some of these gages have been in operation long enough to cover a period of 28 years and a total of 108 stations in Massachusetts now equal or exceed this length of record. This figure compares with 45 stations that had records of 25 or more years in 1913."

The present paper follows the general scheme of Mr. White's tabulations. However, the extremes data have been omitted, since it was felt that in the case of the longer records there would be but little change from the values previously published, while the extreme values for the shorter records of stations established since 1941 are readily found by inspection of the tables.

In general, records showing less than five complete years of rainfall observations after 1941 have been omitted from this publication.

Records of 193 stations in Massachusetts have been tabulated, together with the average precipitation on the watersheds of certain streams.

Observations at stations under the control of the Division of Sanitary Engineering of the Massachusetts Department of Public Health are made daily at 8:00 A.M. and recorded as of the preceding date. On the other hand, the United States Weather Bureau reports precipitation amounts as of the day of observation, and there are other variations in time of recording and the method of reporting of observations of other agencies. Accordingly, there are certain discrepancies between monthly totals as taken from the several sources of these tables.

It should also be noted that the number of years used in calculating means is not always the same as the number of years in the period of record, because of lacunae in the observations at some gages.

ACUSHNET, MASS.—Elevation, 50 feet
Record: January, 1878, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	4.84	3.85	8.62	1.03	1.66	2.23	2.29	7.75	2.86	6.26	6.34	4.72	52.45
1943	5.33	2.29	3.96	3.67	3.81	1.59	2.50	2.63	2.04	3.66	2.56	1.53	35.57
1944	3.03	2.35	5.70	4.72	0.64	2.86	0.52	1.55	5.25	2.26	9.42	4.10	42.40
1945	4.49	5.57	2.62	2.59	4.26	3.96	1.77	2.60	1.41	4.40	10.78	8.99	53.44
1946	4.40	3.52	2.02	2 88	4.82	3.53	3.02	12.72	2.82	0.65	1.26	4.44	46.08
1947	3.58	1.64	3.31	6.62	3.75	4.26	3.46	1.01	2.12	2.99	4.29	4.07	41.10
1948	8.04	3.74	4.57	4.62	10.45	2.96	3.45	1.65	2.65	6.98	5.26	3.11	57.48
1949	4.76	5.47	3.13	5.42	3.53	0.03	2.16	2.46	1.81	1.12	3.63	3.04	36.56
1950	4.78	5.18	4.41	3.61	3.35	2.43	0.77	2.83	1.54	1.03	6.84	4.71	41.48
Av. 73 yrs.	4.36	4.00	4.57	4.06	3.70	3.23	3.13	3.90	3.44	3.96	4.27	4.32	46.94

ADAMS, MASS.—Elevation, 750 feet
Record: January, 1926, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	1.80	1.77	4.55	2.41	4.67	4.45	7.50	1.42	4.63	2.83	7.59	5.16	48.78
1943	2.53	1.88	2.67	4.52	7.80	3.38	8.21	5.62	0.94	4.68	6.47	0.66	49.36
1944	1.37	2.35	4.19	4.83	1.71	4.70	6.78	2.19	6.68	2.23	3.47	3.43	43.93
1945	3.30	3.99	1.69	7.70	5.81	7.97	8.58	2.28	3.32	4.11	5.32	1.80	55.87
1946	2.36	3.13	2.13	2.64	5.38	4.68	4.31	3.51	6.30	3.19	2.11	3.73	43.47
1947	4.28	1.93	3.88	4.89	6.39	4.36	4.08	1.84	4.52	1.62	5.46	2.40	45.65
1948	2.26	3.20	4.41	5.19	8.90	6.89	2.55	2.44	2.19	1.68	6.38	7.98	54.07
1949	6.34	2.70	2.45	4.69	4.13	2.57	3.61	2.02	3.54	2.85	1.97	2.80	39.67
1950	5.29	3.14	2.46	3.50	3.97	3.35	4.26	5.16	3.31	2.07	6.21	2.47	45.19
Av. 25 yrs.	3.27	2.50	3.34	4.15	4.16	4.37	4.84	3.34	4.04	2.95	4.22	3.31	44.49

AGAWAM, MASS. (Provin Mt. Reservoir)—Elevation, 410 feet.
Record: January, 1914, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	4.16	2.33	6.75	0.78	4.42	5.19	6.45	2.73	4.55	4.80	5.70	6.65	54.51
1943	3.04	2.17	3.71	3.61	5.29	3.60	6.29	0.72	1.35	5.56	4.80	0.68	40.82
1944	1.43	2.77	5.09	5.06	0.94	5.11	2.26	1.54	6.40	1.94	5.01	3.61	41.16
1945	3.96	4.70	2.78	4.39	7.44	6.41	7.00	4.42	2.41	2.34	4.92	5.82	56.59
1946	3.09	2.83	1.83	2.24	6.12	2.99	5.25	4.64	4.59	1.26	0.97	3.28	39.09
1947	3.18	3.32	3.14	4.92	4.92	2.97	3.59	3.78	4 40	3.44	6.35	3.18	47.19
1948	4.33	1.98	3.92	3.29	6.33	6.21	3.54	3.81	1.42	1.27	6.46	6.25	48.81
1949	5.35	4.82	1.68	4.21	4.86	0.46	2.44	5.31	3.10	2.42	2.37	3.31	40.33
1950	5.08	4.99	3.94	3.64	4.29	3.32	2.24	4.59	1 41	2.50	5.14	5.16	46.30
Av. 37 yrs.	3.70	3.46	3.74	3.65	3.92	4.21	4.30	3.79	3.71	2.99	4.02	3.71	45.20

AMHERST, MASS.—Elevation, 254 feet
Record: January, 1836, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.54	1.66	7.89	0.96	2.98	3.63	4.95	2.93	3.94	3.27	6.07	6.03	47.85
1943	2.92	1.63	3.07	3.66	5.62	2.38	6.18	2.49	2.40	3.88	4.64	0.58	39.45
1944	1.24	2.34	4.36	3.66	1.35	4.70	3.88	4.33	5.31	1.74	4.21	2.18	39.30
1945	3.07	3.33	2.16	5.43	6.45	7.67	7.36	2.79	3.57	2.18	3.54	3.91	51.46
1946	2.72	3.52	1.60	2.16	5.41	3.30	5.30	4.00	4.88	1.51	0.70	3.51	38.61
1947	3.37	1.96	3.29	4.59	4.63	3.22	2.73	1.69	2.84	2.04	5.63	2.33	38.32
1948	2.63	2.45	2.92	2.87	5.83	5.67	2.95	3.56	1.91	1.13	5.22	2.87	40.01
1949	4.52	2.47	1.03	2.70	4.76	0.72	3.41	3.64	3.55	2.58	1.79	2.44	33.61
1950	4.33	3.99	2.67	3.64	2.77	3.65	2.83	2.93	2.24	1.87	6.60	4.64	42.16
Av. 115 yrs.	3.40	3.12	3.54	3.28	3.79	3.77	4.26	4.11	3.76	3.46	3.69	3.47	43.65

ASHBURNHAM, MASS.—Elevation, 1,190 feet
Record: September, 1942, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	—	—	—	—	—	—	—	—	3.14	2.87	5.65	5.18	—
1943	2.64	1.57	2.58	3.49	6.77	2.26	4.31	1.99	1.00	6.94	5.35	0.76	39.66
1944	1.61	2.20	4.32	3.89	1.41	10.93	3.86	0.62	5.64	1.82	3.16	4.22	46.68
1945	3.47	4.24	1.61	4.68	5.38	6.79	4.49	2.58	1.84	2.35	4.16	4.26	45.85
1946	2.99	3.25	2.06	2.65	6.82	3.85	3.96	6.84	3.14	2.86	0.94	3.80	43.16
1947	3.07	1.85	3.33	3.79	3.29	3.81	5.16	2.05	3.48	1.23	7.39	2.20	40.65
1948	2.48	2.40	3.19	2.72	6.79	4.89	4.22	1.29	0.47	2.82	6.90	2.47	40.64
1949	5.10	3.32	1.85	5.37	3.84	1.53	2.93	1.37	5.20	2.22	1.97	2.66	37.36
1950	4.60	3.87	3.20	3.43	2.49	3.52	1.71	3.64	1.33	2.74	7.13	4.52	42.18
Av. 8 yrs.	3.24	2.84	2.77	3.75	4.60	4.70	3.83	2.55	3.14	2.87	4.63	3.11	42.03

ASHBY, MASS. (Watatic Pond)—Elevation, 1,000 feet
Record: January, 1915, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.70	1.59	7.32	1.75	3.01	6.41	6.24	2.56	3.93	3.64	5.69	5.17	51.01
1943	3.66	2.54	2.70	4.58	8.17	1.62	3.02	2.76	1.68	7.37	6.25	0.77	45.12
1944	1.95	2.49	5.35	4.74	1.52	11.40	3.16	0.91	8.76	2.10	3.84	3.97	50.19
1945	3.63	4.11	1.82	5.52	5.93	7.23	4.33	2.80	2.74	2.64	5.13	4.53	50.41
1946	2.97	3.46	1.97	3.50	7.74	3.62	3.54	7.60	5.50	1.22	1.13	3.90	46.15
1947	3.41	2.31	3.44	5.16	3.10	4.58	5.19	1.79	3.75	1.59	7.81	2.66	44.79
1948	3.33	2.58	3.69	3.82	7.34	5.42	3.96	1.22	0.70	2.79	6.75	2.47	44.07
1949	3.12	2.49	1.64	6.81	4.20	1.42	4.41	2.89	3.69	2.60	2.22	2.85	38.34
1950	5.44	3.02	3.42	3.77	3.14	3.05	1.78	5.17	1.05	3.09	7.25	4.62	44.80
Av. 36 yrs.	3.50	2.96	3.70	4.21	4.05	4.72	4.04	3.76	4.20	3.44	4.66	3.56	46.80

ASHLAND, MASS. (Ashland Reservoir)—Elevation, 250 feet
Record: January, 1890, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.48	3.85	7.43	1.60	2.46	2.86	7.60	2.43	1.71	3.32	5.04	6.89	48.67
1943	3.53	1.45	3.98	3.51	5.03	1.77	5.12	1.73	0.80	5.60	3.56	1.12	37.20
1944	1.78	2.37	4.50	4.74	1.02	4.66	2.05	2.51	7.01	2.23	6.27	3.37	42.51
1945	3.17	5.24	2.23	3.00	5.07	6.60	2.19	3.81	1.51	2.21	7.11	6.43	48.57
1946	3.89	3.26	1.66	2.56	4.85	2.76	1.39	8.73	4.47	0.39	1.26	4.13	39.35
1947	2.81	2.11	3.23	4.70	4.03	3.15	4.54	1.92	3.16	1.21	5.41	4.36	40.63
1948	5.71	2.16	3.33	2.78	5.92	4.98	4.54	1.19	1.09	2.87	6.31	1.88	42.76
1949	3.05	3.53	2.36	3.75	4.41	0.42	1.09	1.88	5.96	1.43	2.39	2.12	32.39
1950	4.02	4.26	3.54	3.13	1.60	1.93	2.94	6.88	1.60	2.67	6.43	3.80	42.80
Av. 61 yrs.	3.83	3.74	4.09	3.65	3.26	3.37	3.54	3.56	3.69	3.15	3.72	3.75	43.35

ATHOL, MASS. (Water Works)—Elevation, 850 feet
Record: January, 1912, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.30	1.72	6.74	1.29	2.75	4.78	4.63	1.28	3.30	3.63	4.60	4.57	42.59
1943	2.26	1.44	2.63	3.75	6.21	2.16	5.37	2.67	2.29	5.58	6.19	0.57	41.12
1944	1.40	1.98	4.29	3.57	1.32	8.95	4.23	0.54	5.85	1.81	2.97	2.68	39.59
1945	2.99	3.58	2.03	5.38	6.25	7.14	6.56	2.43	3.81	3.02	3.59	3.79	50.57
1946	2.73	3.11	1.71	2.66	6.18	3.80	4.93	5.70	3.87	1.25	0.89	3.23	40.06
1947	3.38	2.12	3.02	4.25	4.21	4.07	3.26	3.67	3.62	1.09	5.28	2.42	40.39
1948	2.40	2.26	3.02	3.63	6.68	6.04	2.43	1.90	1.30	1.26	6.67	2.96	40.56
1949	4.51	3.06	1.59	4.01	4.26	1.57	3.43	2.14	3.73	2.53	2.25	3.15	36.23
1950	5.00	3.53	2.60	3.31	2.64	5.10	3.08	4.41	1.45	1.99	7.51	3.92	44.54
Av. 39 yrs.	3.19	2.55	3.24	3.58	3.47	4.38	4.21	3.55	3.93	2.79	3.65	3.17	41.71

ATHOL, MASS. (Fryville)—Elevation, 620 feet
Record: July, 1921, to April, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.26	1.94	6.50	1.37	3.05	4.96	4.33	1.43	3.69	3.46	3.90	4.80	42.69
1943	2.00	1.37	2.52	3.34	6.06	2.12	4.61	1.76	2.62	4.79	5.87	0.59	37.65
1944	1.48	1.91	4.41	3.46	1.06	8.72	3.88	0.41	5.08	2.12	3.04	2.70	38.27
1945	3.09	3.74	2.17	5.01	5.70	5.92	6.82	2.41	3.02	3.08	3.31	3.44	47.71
1946	2.29	3.35	1.26	2.20	6.15	3.96	4.46	4.26	3.81	1.18	0.61	1.42	34.95
1947	3.49	2.71	3.05	3.36	4.29	3.29	3.60	2.28	3.19	1.20	5.86	2.74	39.06
1948	2.69	2.04	2.74	3.50	7.37	6.24	2.62	1.40	1.06	1.09	5.71	1.95	38.41
1949	4.53	2.38	1.27	4.03	4.00	2.00	2.96	2.50	3.13	2.67	1.50	3.16	34.13
1950	4.39	2.54	—	4.34	Inc.	—	—	—	—	—	—	—	—
Av. 28 yrs.	3.31	2.56	3.34	3.56	3.55	4.64	4.39	3.37	3.83	2.86	3.58	2.93	41.92

ATTLEBORO, MASS. (Water Works)—Elevation, 100 feet
Record: January, 1896, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.82	3.33	7.89	0.96	2.34	3.47	4.90	4.67	1.79	3.75	4.65	5.26	46.83
1943	3.06	1.50	3.26	3.68	4.07	2.16	3.04	2.23	1.26	5.70	2.71	0.98	33.65
1944	2.06	2.30	4.38	4.55	0.85	4.93	1.11	1.68	10.66	3.21	6.41	3.41	45.55
1945	3.12	4.02	2.47	2.83	4.62	5.81	2.86	3.04	3.21	2.70	8.21	6.67	49.56
1946	3.63	3.47	1.84	2.71	4.58	3.43	1.45	11.66	2.19	0.34	0.95	3.49	39.74
1947	2.60	0.99	2.87	4.92	3.83	5.12	4.55	1.75	3.24	1.88	5.12	3.18	40.05
1948	5.13	1.95	3.87	3.68	9.62	4.36	4.74	3.11	2.55	4.94	5.54	1.54	51.03
1949	3.67	2.73	1.45	5.24	3.67	0.10	3.13	2.27	3.28	1.83	3.69	1.87	32.93
1950	3.38	3.61	3.06	2.71	2.43	2.40	1.15	5.37	1.52	2.41	7.62	4.06	39.72
Av. 50 yrs.	3.73	3.30	3.82	3.80	3.32	3.60	3.73	3.79	3.96	2.97	3.75	3.45	43.22

BARNSTABLE, MASS. (Hyannis)—Elevation, 31 feet
Record: January, 1892, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	2.99	3.29	8.29	0.55	1.72	2.65	1.67	8.60	3.72	4.89	4.12	3.83	46.32
1943	4.76	2.63	3.63	3.01	4.45	1.51	5.70	4.79	3.10	4.61	2.76	1.35	42.30
1944	3.29	2.26	5.44	5.35	0.65	3.47	0.53	0.43	9.27	2.56	9.27	2.94	45.46
1945	—	—	—	—	—	—	—	—	—	—	—	—	—
1946	—	—	—	—	—	—	2.03	14.06	1.98	0.37	0.75	4.04	—
1947	3.70	2.13	2.58	5.56	4.84	3.74	2.80	0.29	2.32	1.15	3.03	3.80	35.94
1948	6.88	3.11	4.19	4.32	8.06	2.69	1.37	0.81	1.22	7.94	5.17	2.45	48.21
1949	4.08	4.35	3.54	5.06	4.30	0.00	1.85	2.56	3.40	2.09	4.14	3.51	38.88
1950	3.15	4.17	4.05	2.96	1.47	2.52	1.60	2.57	3.92	1.20	6.18	5.09	38.88
Av. 57 yrs.	4.01	3.52	4.36	3.70	3.30	3.15	2.89	3.39	3.40	3.56	3.73	3.78	42.79

BARRE, MASS.—Elevation, 930 feet
Record: August, 1919, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.59	2.02	5.65	0.92	3.58	7.28	6.49	1.78	3.23	3.86	3.55	4.54	46.49
1943	3.44	1.40	3.73	3.91	5.55	1.63	4.76	4.30	1.20	5.64	6.28	0.62	42.46
1944	1.30	1.97	4.61	4.31	1.17	8.45	2.62	1.47	7.28	1.72	3.55	3.44	41.89
1945	2.86	3.67	1.85	5.53	5.94	6.81	8.22	4.37	1.85	3.07	3.89	4.85	52.91
1946	2.89	3.68	1.98	2.91	5.60	5.51	3.56	4.06	5.79	0.92	1.72	3.56	42.18
1947	3.16	2.41	3.42	4.91	3.18	4.00	7.31	1.07	2.25	0.88	5.27	2.72	40.58
1948	3.19	2.56	4.02	3.16	7.42	6.52	4.93	1.62	1.97	1.30	6.83	2.52	46.03
1949	5.53	3.44	1.43	3.14	5.22	0.64	3.00	3.30	3.25	2.84	2.22	3.65	37.66
1950	4.88	3.80	2.61	3.49	3.96	4.38	3.08	2.97	1.55	1.83	7.58	4.06	44.19
Av. 31 yrs.	3.57	2.95	3.60	3.83	3.78	4.58	4.81	3.52	4.33	3.04	4.00	3.31	45.32

BARRE, MASS. (White Valley)—Elevation, 680 feet
Record: January, 1930, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.77	2.56	5.72	1.04	4.58	4.78	5.94	2.20	3.26	3.46	4.65	5.00	46.96
1943	3.13	1.48	3.32	3.95	5.14	1.55	3.80	2.46	1.08	6.00	6.21	0.57	38.69
1944	1.25	2.38	4.48	4.41	1.22	8.01	1.86	1.08	7.82	1.51	3.64	3.09	40.75
1945	3.73	3.98	2.02	5.40	5.58	6.50	4.93	3.25	1.90	2.80	4.08	4.08	48.25
1946	3.25	3.40	1.90	2.44	5.37	4.97	4.29	4.68	6.54	0.99	1.24	3.07	42.14
1947	2.95	2.37	2.27	4.35	2.59	3.15	5.28	0.68	2.44	0.70	6.42	3.36	36.56
1948	4.13	2.62	3.89	3.53	6.03	6.42	7.30	2.71	1.67	1.87	7.01	2.85	50.03
1949	4.11	3.40	1.99	3.12	4.40	0.78	2.64	4.35	2.98	2.34	2.26	3.63	36.00
1950	4.97	3.65	2.71	3.70	4.27	3.58	3.76	2.94	1.40	1.55	7.42	3.94	43.89
Av. 21 yrs.	3.43	2.82	3.41	3.29	3.76	4.20	4.25	3.22	4.41	2.76	3.66	3.15	42.36

BELCHERTOWN, MASS.—Elevation, 550 feet
Record: July, 1939, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1939	—	—	—	—	—	—	2.90	3.81	2.83	5.19	1.02	4.15	—
1940	1.91	2.08	4.45	6.23	4.84	1.80	3.96	2.06	2.34	1.52	6.98	2.31	40.48
1941	1.91	1.57	1.30	0.87	2.67	3.40	6.65	4.07	1.21	2.55	3.56	2.90	32.66
1942	3.50	1.33	5.08	1.29	3.34	4.71	4.98	1.72	4.29	4.37	7.32	5.62	47.55
1943	2.79	1.61	3.34	3.11	6.21	3.12	7.03	3.90	1.44	4.19	6.49	0.76	43.99
1944	1.05	1.88	4.28	4.81	1.40	7.92	1.72	1.58	7.08	2.53	5.12	3.03	42.40
1945	2.58	3.49	1.88	5.25	6.30	6.81	7.89	3.14	1.74	2.35	4.12	5.16	50.71
1946	3.28	3.66	1.68	2.16	5.75	4.59	4.50	4.70	3.24	0.81	1.03	3.03	38.43
1947	3.17	2.79	2.86	5.35	2.77	3.06	5.09	1.79	2.14	2.05	5.35	3.00	39.42
1948	3.47	2.48	3.87	3.38	4.84	7.45	4.23	2.83	2.20	1.22	6.58	2.70	45.25
1949	5.15	3.11	1.47	2.57	5.39	1.10	4.44	3.25	2.32	2.55	2.20	3.85	37.40
1950	4.42	4.10	2.76	3.80	3.01	4.57	2.97	3.08	1.29	1.95	5.52	3.83	41.30
Av. 11 yrs.	3.02	2.55	3.00	3.53	4.23	4.41	4.86	2.92	2.66	2.37	4.93	3.29	41.77

BERLIN, MASS. (Hudson Water Works)—Elevation, 450 feet
Record: December, 1927, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.42	2.86	6.96	1.48	2.84	4.62	6.57	2.51	2.14	2.73	4.88	5.80	46.81
1943	2.71	1.16	3.58	3.04	4.75	3.14	4.46	1.81	0.84	5.77	4.75	0.78	36.79
1944	1.52	1.91	4.08	3.96	0.81	6.13	0.71	1.45	5.62	2.34	5.25	3.39	37.17
1945	2.81	3.47	2.25	3.56	5.11	6.36	3.32	3.96	1.66	1.83	5.50	5.22	45.05
1946	3.52	2.86	1.60	2.71	6.23	4.22	2.66	7.16	5.06	0.75	1.14	3.57	41.48
1947	2.72	1.88	3.40	4.86	3.61	3.39	5.27	2.21	2.94	1.06	4.49	2.61	38.44
1948	3.18	2.05	2.80	2.99	6.57	5.23	5.67	2.88	0.67	2.50	6.34	1.57	42.45
1949	3.64	2.83	1.51	4.46	3.44	0.53	1.60	3.05	2.02	1.85	2.46	1.91	29.30
1950	4.06	3.53	3.24	3.18	1.68	1.85	2.85	4.19	1.70	2.64	5.21	3.66	37.79
Av. 23 yrs.	3.37	2.58	3.61	3.60	3.45	4.01	3.23	3.62	3.96	2.81	3.67	3.01	40.92

BEVERLY, MASS. (Wenham Lake)—Elevation, 60 feet
Record: January, 1874, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.93	4.74	5.80	1.27	2.31	3.79	3.80	3.29	2.18	4.20	4.44	4.43	44.18
1943	3.53	1.19	3.55	2.65	5.08	1.66	4.46	1.84	1.44	4.44	3.29	0.82	33.95
1944	2.37	2.21	3.38	3.39	0.60	4.84	1.87	2.00	5.93	1.82	5.62	3.36	37.39
1945	2.58	3.49	1.70	2.72	4.67	6.92	3.21	2.70	1.41	2.30	7.05	5.59	44.34
1946	4.16	3.14	1.50	2.89	4.89	2.76	1.22	7.96	2.28	0.80	1.49	4.17	37.26
1947	2.63	1.12	3.06	4.20	3.54	2.02	4.14	2.14	2.67	0.55	5.62	3.18	34.87
1948	4.36	2.22	2.54	2.76	5.22	4.99	4.55	1.37	0.63	3.64	5.52	1.49	39.29
1949	3.90	3.17	1.63	3.81	3.12	0.94	1.56	4.08	4.09	2.18	3.39	1.87	33.74
1950	4.32	3.10	3.08	1.87	1.81	1.32	2.29	4.15	0.96	2.29	7.33	4.05	36.57
Av. 77 yrs.	3.46	3.06	3.53	3.45	3.34	3.53	3.63	3.60	3.48	3.34	3.89	3.34	41.65

BLANDFORD, MASS.—Elevation, 1,400 feet
Record: January, 1930, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.63	2.32	6.84	1.33	5.24	5.39	5.77	2.97	5.32	4.37	6.18	6.40	55.76
1943	2.71	1.75	3.37	2.98	6.04	4.03	6.33	1.65	2.59	5.81	5.07	0.77	43.10
1944	1.59	2.38	4.66	3.93	1.13	5.18	2.05	3.51	7.35	1.99	5.30	3.81	42.88
1945	3.97	4.13	1.80	4.95	8.03	6.82	7.48	3.94	6.18	2.68	3.71	3.88	57.57
1946	2.33	2.84	1.23	2.15	6.24	3.10	4.43	3.87	4.62	1.46	0.88	2.92	36.07
1947	3.24	2.65	4.41	4.93	4.60	3.29	4.55	4.54	3.36	3.84	5.26	2.30	46.97
1948	2.86	2.74	3.32	3.17	4.53	7.66	4.53	2.73	2.92	1.86	4.81	11.58	52.71
1949	5.13	3.15	1.58	4.27	4.06	0.71	3.85	3.14	3.68	2.17	1.69	3.24	36.67
1950	4.51	4.33	3.53	2.83	4.19	4.07	2.11	3.58	1.21	2.64	8.88	5.08	46.96
Av. 21 yrs.	3.51	2.78	3.94	3.28	4.40	4.64	4.05	3.73	4.60	3.18	4.06	3.64	45.81

BOSTON, MASS. (Chestnut Hill Reservoir)—Elevation, 124 feet
Record: January, 1873, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.64	3.65	6.98	1.58	2.09	3.87	5.10	2.35	2.21	3.23	5.10	4.83	44.63
1943	3.43	1.41	4.08	3.50	5.16	2.39	3.56	1.29	2.23	5.18	2.98	1.37	36.58
1944	1.77	2.69	4.38	3.77	0.43	4.62	2.62	1.90	6.20	3.33	6.47	3.28	41.46
1945	4.25	3.93	2.24	2.66	5.15	7.96	2.39	3.14	1.21	3.25	6.76	6.27	49.21
1946	3.66	3.52	1.71	2.64	5.51	3.14	2.98	9.65	2.53	0.39	1.22	3.90	40.85
1947	2.61	1.17	3.06	4.75	4.51	2.84	5.85	1.79	4.32	1.48	6.05	3.38	41.81
1948	5.76	2.49	3.44	2.68	5.54	4.19	5.48	1.48	1.05	3.43	5.28	1.36	42.18
1949	3.19	8.00	1.35	4.69	3.39	1.62	1.23	5.75	4.59	1.57	3.27	2.25	40.90
1950	3.73	3.82	3.75	3.20	1.99	1.48	2.19	3.00	1.36	2.08	7.20	3.31	37.11
Av. 78 yrs.	3.99	3.88	3.98	3.81	3.31	3.44	3.50	3.32	3.46	3.46	3.94	3.60	44.19

BOSTON, MASS. (Arnold Arboretum)—Elevation, 75 feet
Record: August, 1934, to August, 1946

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	4.21	3.36	7.70	1.63	1.97	3.11	5.30	2.30	2.64	3.39	5.05	4.94	45.60
1943	3.52	1.42	4.17	3.03	5.32	2.38	3.12	1.25	2.00	5.74	2.60	1.28	35.83
1944	1.96	2.54	4.20	3.96	0.34	4.01	2.10	2.33	7.46	3.45	6.58	3.39	42.32
1945	3.45	4.35	2.21	2.69	5.44	7.15	3.01	3.50	2.17	2.66	8.78	6.90	52.31
1946	4.36	3.65	1.79	2.77	5.67	3.51	2.84	10.53	—	—	—	—	—
Av. 11 yrs.	4.13	3.03	4.03	3.78	2.94	4.32	3.43	3.22	3.57	3.06	4.47	3.84	43.82

BOSTON, MASS. (Brookline Pumping Station, West Roxbury)—Elevation, 90 feet
Record: October, 1913, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.53	2.98	5.65	1.37	2.08	2.37	5.33	2.27	2.34	3.13	4.73	4.86	40.64
1943	3.03	1.04	3.27	3.11	5.23	2.11	3.89	1.20	1.88	4.48	2.64	1.18	33.06
1944	1.69	2.26	3.65	4.05	0.39	4.77	2.15	2.97	6.92	2.98	6.57	3.17	41.57
1945	3.34	4.32	1.98	2.41	5.26	6.18	2.31	2.95	2.01	2.67	8.71	6.55	48.69
1946	3.53	3.04	1.20	2.37	4.86	2.83	2.03	8.94	2.40	0.33	1.20	3.05	35.78
1947	2.08	1.23	3.03	3.40	3.95	3.76	5.72	2.67	4.60	1.52	5.10	4.22	41.28
1948	5.41	1.45	2.66	2.50	5.55	4.27	5.20	1.41	1.56	3.90	5.29	1.47	40.67
1949	2.82	3.14	1.28	4.04	3.26	0.89	1.73	6.01	4.09	1.44	3.43	1.92	34.05
1950	3.60	3.21	3.23	2.50	1.56	1.44	1.43	3.33	1.10	1.73	6.15	3.05	32.33
Av. 37 yrs.	3.50	3.08	3.41	3.72	3.10	3.70	3.54	3.91	3.57	2.83	3.65	3.35	41.36

BOSTON, MASS. (U.S. Weather Bureau)—Elevation, 27 feet
Record: January, 1871, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.69	3.45	7.00	1.60	2.11	4.24	4.14	2.09	1.96	2.78	4.69	4.72	42.47
1943	3.74	1.23	4.02	2.64	4.56	1.49	3.91	1.28	1.41	4.82	2.16	0.99	32.25
1944	2.03	2.15	3.92	3.52	0.25	5.35	1.61	1.79	5.36	2.58	5.68	2.83	37.07
1945	3.67	4.09	1.90	2.02	4.47	6.44	2.12	4.27	1.81	2.23	6.86	7.42	47.30
1946	4.18	3.00	1.50	2.62	4.91	2.76	2.22	9.92	2.04	0.34	0.98	3.60	38.07
1947	2.45	1.44	2.30	4.15	4.36	2.88	3.98	2.19	3.95	1.13	5.13	3.95	37.91
1948	5.11	2.08	3.14	2.62	5.37	4.50	4.53	1.24	0.67	4.84	5.16	1.25	40.51
1949	3.21	3.25	1.66	3.23	2.53	0.93	1.10	2.12	6.47	1.60	3.71	1.64	31.45
1950	3.86	3.81	2.99	2.38	1.55	1.10	1.45	3.14	0.89	1.99	6.17	3.37	32.70
Av. 80 yrs.	3.57	3.23	3.71	3.48	3.15	3.16	3.28	3.58	3.13	3.20	3.68	3.34	40.51

BOYLSTON, MASS.—Elevation, 530 feet
Record: January, 1896, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	4.59	2.57	7.54	1.69	2.36	6.21	6.53	2.56	2.49	2.72	5.84	5.96	51.06
1943	3.72	1.61	3.91	3.69	5.18	2.29	5.18	1.50	0.90	6.46	5.19	0.75	40.38
1944	1.45	2.59	4.74	4.18	1.01	6.01	0.75	1.56	5.39	2.00	5.04	3.46	38.18
1945	4.35	4.45	2.89	3.61	5.13	6.06	4.55	4.02	2.32	1.96	5.85	5.56	50.75
1946	3.74	3.47	1.56	3.06	6.70	3.35	3.21	7.94	4.12	0.86	1.45	3.87	43.33
1947	2.95	2.49	3.40	4.32	4.81	3.68	5.08	3.31	3.42	1.21	4.49	3.34	42.50
1948	4.26	3.02	3.47	3.15	7.43	6.04	5.85	2.01	0.71	3.41	7.17	2.55	49.07
1949	4.03	3.62	1.90	4.00	3.85	0.51	1.25	3.18	1.81	1.83	2.72	2.62	30.32
1950	4.37	5.07	3.91	3.88	2.10	2.41	1.53	4.00	1.39	2.95	5.57	4.08	41.26
Av. 55 yrs.	3.85	3.72	4.09	3.79	3.43	3.90	3.88	3.77	3.88	3.04	3.97	3.80	45.12

BRAINTREE, MASS.—Elevation, 100 feet
Record: October, 1941, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1941	—	—	—	—	—	—	—	—	—	1.70	2.90	3.37	—
1942	4.03	3.06	8.11	1.66	2.42	3.30	6.51	2.31	2.81	3.38	6.19	4.65	48.43
1943	4.23	1.78	3.61	3.62	5.24	2.24	3.14	1.16	2.55	5.38	3.57	1.29	37.81
1944	1.89	2.54	4.87	4.07	0.32	5.75	3.44	0.91	9.32	3.70	7.17	3.33	47.31
1945	4.44	4.93	2.59	2.54	5.81	6.14	3.40	5.06	1.44	2.87	10.48	7.73	57.43
1946	3.79	3.28	1.50	2.99	4.90	3.98	0.92	14.13	2.71	0.24	1.07	4.05	43.56
1947	2.62	1.44	3.19	4.98	5.09	5.20	3.68	3.17	5.34	2.33	5.27	4.58	46.89
1948	6.27	2.23	3.21	3.11	6.08	5.33	6.55	1.70	1.20	6.41	6.61	1.50	50.20
1949	3.60	3.55	1.50	4.20	3.65	0.40	1.81	2.35	3.42	1.93	3.76	1.93	32.10
1950	3.52	3.77	2.98	3.49	2.02	1.98	2.99	5.41	1.55	2.19	7.72	3.89	41.51
Av. 9 yrs.	3.82	2.95	3.51	3.41	3.95	3.81	3.60	4.02	3.37	3.16	5.76	3.66	45.02

BRIDGEWATER, MASS. (State Farm)—Elevation, 60 feet
Record: June, 1914, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.25	2.65	7.74	0.99	1.30	3.48	4.82	3.87	1.82	3.93	4.53	4.00	42.38
1943	2.09	1.70	3.06	3.50	5.16	1.82	3.32	2.75	1.67	4.01	2.97	1.18	33.23
1944	2.39	2.47	4.71	3.91	0.53	3.64	0.95	1.05	7.79	2.50	7.36	3.20	40.50
1945	4.46	4.57	2.17	2.37	4.99	5.17	2.46	2.27	1.27	3.69	9.98	8.05	51.45
1946	3.72	2.82	1.70	2.38	4.12	4.06	1.15	12.03	2.73	0.27	1.25	3.54	39.77
1947	2.57	1.54	1.83	5.92	4.11	4.81	4.60	1.43	2.66	2.36	4.24	3.79	39.86
1948	6.31	2.12	3.88	3.46	8.81	3.18	4.32	3.93	1.20	5.88	5.07	2.54	50.70
1949	3.78	3.39	1.27	3.78	3.32	0.04	1.61	1.97	3.50	1.38	3.11	1.99	29.14
1950	3.62	4.07	3.51	2.79	2.13	2.57	0.93	3.25	1.96	1.33	6.28	3.84	36.28
Av. 36 yrs.	3.80	2.98	3.64	3.79	3.14	3.49	3.55	3.88	3.64	3.01	3.72	3.58	42.22

BROCKTON, MASS. (City Hall)*—Elevation, 200 feet
Record: January, 1894, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.46	3.18	7.09	1.24	1.22	3.07	4.05	2.28	1.68	2.74	4.27	3.44	37.72
1943	2.56	1.32	2.48	2.93	4.25	2.13	2.15	2.74	0.92	2.81	2.67	0.93	27.89
1944	1.46	1.79	4.09	3.34	0.17	4.68	0.80	0.71	7.89	2.11	6.29	2.31	35.64
1945	2.87	3.31	1.91	2.05	4.09	4.41	2.27	2.31	1.86	2.55	7.84	6.08	41.55
1946	3.56	2.79	1.93	2.17	3.66	4.06	0.71	8.84	2.46	0.25	0.83	3.57	34.83
1947	2.59	1.11	1.92	3.58	4.02	4.34	3.46	1.49	6.72	1.79	4.55	2.96	38.53
1948	5.21	1.90	4.24	3.17	7.45	3.77	6.31	2.97	0.31	5.58	5.47	1.40	47.78
1949	3.10	3.25	2.11	3.47	3.87	0.07	0.40	1.27	3.24	1.32	2.78	2.24	27.12
1950	3.54	3.29	2.94	2.71	1.27	1.83	2.78	6.76	5.77	1.88	7.33	2.85	42.95
Av. 57 yrs.	3.28	2.98	3.43	3.40	2.97	3.10	3.29	3.38	3.51	3.04	3.42	3.25	39.05

*Recording gage on roof.

BROCKTON, MASS. (Sewage Disposal Works)—Elevation, 100 feet
Record: December, 1919, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.57	3.09	8.03	1.33	1.81	3.14	6.15	3.28	2.03	3.25	5.02	4.52	45.22
1943	3.93	1.71	3.21	3.79	4.64	2.76	2.43	3.72	1.70	3.58	3.38	1.08	35.93
1944	2.16	1.99	4.98	4.07	0.38	5.32	0.90	1.16	8.55	2.75	7.45	3.14	42.85
1945	3.64	4.39	2.39	2.32	4.44	5.67	2.78	2.75	2.28	3.23	10.27	7.30	51.46
1946	3.90	3.57	2.21	2.64	4.18	3.96	0.94	10.29	2.20	0.28	1.04	3.93	39.14
1947	3.00	1.08	2.93	4.97	3.97	5.20	3.68	2.08	6.20	2.25	5.66	4.20	45.22
1948	6.45	1.82	4.18	3.66	9.31	3.91	7.28	2.66	1.27	6.99	5.75	1.72	55.00
1949	3.75	3.86	1.91	3.60	4.27	0.12	0.79	2.33	2.84	1.68	3.33	2.11	30.59
1950	3.12	2.90	2.38	3.13	1.69	2.57	2.05	8.06	3.52	1.89	6.86	4.44	42.61
Av. 31 yrs.	3.71	3.03	3.87	3.78	3.31	3.84	3.36	4.19	3.52	3.14	4.10	3.59	43.44

CAMBRIDGE, MASS. (Harvard University)
Record: March, 1940, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1940	—	—	3.11	4.80	3.45	2.60	2.75	1.16	2.59	0.81	—	—	—
1941	3.38	1.66	2.26	1.57	2.46	3.12	—	1.58	1.25	1.90	2.78	3.08	—
1942	3.80	3.53	6.85	1.17	1.99	3.96	3.76	2.03	2.00	3.15	5.17	—	—
1943	—	1.09	—	2.85	4.45	1.34	3.36	1.12	1.53	5.77	2.51	1.15	—
1944	2.31	1.83	3.79	3.53	0.46	4.19	1.56	2.19	6.34	2.72	6.02	2.60	37.54
1945	3.54	4.06	1.78	2.30	4.78	6.00	2.39	3.27	1.15	2.50	7.63	6.40	45.80
1946	3.79	3.05	1.16	2.17	4.03	2.40	2.50	10.47	2.62	0.40	1.24	4.20	38.03
1947	2.47	0.86	2.81	3.43	4.10	2.58	5.80	1.93	4.78	1.09	6.27	3.90	40.02
1948	4.80	2.06	3.08	2.57	5.37	4.84	5.10	1.39	0.74	3.90	5.63	1.45	40.93
1949	3.30	3.09	1.65	4.97	3.77	0.54	1.19	1.42	8.91	1.53	3.10	1.75	35.22
1950	3.70	3.49	3.28	2.64	1.69	1.04	1.10	3.30	1.40	2.42	6.57	3.26	33.89
Av. 7 yrs.	3.42	2.63	2.51	3.09	3.46	3.08	2.80	3.42	3.70	2.08	5.21	3.36	38.76

CHARLES RIVER WATERSHED, MASS. (Above Brookline Pumping Station)
Record: October, 1913, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	4.12	2.89	7.10	1.16	2.21	2.98	5.63	2.78	2.07	3.59	5.02	5.61	45.16
1943	3.18	1.28	3.56	3.67	5.11	2.23	4.78	1.29	1.17	5.61	3.01	1.16	36.05
1944	1.67	2.24	4.41	4.20	0.83	4.70	1.61	2.26	7.78	3.02	6.72	3.27	42.71
1945	3.07	4.13	1.93	2.87	5.24	6.52	3.05	3.98	1.74	2.59	8.09	6.72	49.93
1946	3.74	3.26	1.67	2.49	5.36	3.68	1.40	9.61	2.75	0.52	1.15	3.69	39.32
1947	2.47	1.42	3.09	4.53	4.33	4.10	5.08	2.32	4.40	1.44	5.86	3.93	42.97
1948	5.54	1.82	3.17	2.28	5.81	4.17	5.93	1.81	1.18	3.92	5.97	1.83	44.13
1949	3.44	3.34	1.56	4.08	3.75	0.42	1.28	5.54	3.53	1.60	3.06	1.82	33.42
1950	3.75	3.91	3.29	3.30	2.04	2.11	2.82	4.17	1.75	2.24	6.48	3.57	39.43
Av. 37 yrs.	3.56	3.05	3.55	3.68	3.18	3.71	3.70	3.97	3.47	2.87	3.77	3.40	41.91

CHARLTON, MASS. (Charlton Depot)—Elevation, 990 feet
Record: July, 1920, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	4.16	2.33	8.00	1.33	2.80	4.42	5.29	3.60	2.41	4.03	5.17	4.80	48.34
1943	2.65	1.61	3.95	3.66	5.78	2.37	4.97	1.12	0.93	5.67	5.01	1.29	39.01
1944	1.29	2.72	4.72	4.30	1.47	6.09	1.78	1.31	6.33	1.54	5.57	3.84	40.96
1945	3.30	6.63	2.42	4.69	4.71	6.79	3.29	3.94	1.37	2.66	6.18	5.12	51.10
1946	3.18	4.22	1.58	2.16	4.52	4.19	3.19	6.62	5.75	0.73	1.34	3.16	40.64
1947	2.84	2.63	3.12	5.54	3.10	3.48	5.31	3.15	3.40	1.03	4.87	3.16	41.63
1948	3.08	2.30	5.26	3.73	6.99	8.01	5.74	2.37	0.84	2.67	5.23	2.58	48.80
1949	3.55	2.71	1.77	3.43	3.35	0.64	2.27	4.71	2.23	2.17	2.32	2.80	31.95
1950	4.35	3.04	3.07	4.39	2.76	3.35	3.48	5.28	2.11	2.22	5.50	3.91	43.96
Av. 30 yrs.	3.22	3.08	3.76	3.61	3.46	4.07	3.94	3.81	3.68	3.02	3.81	3.00	42.46

CHESTER, MASS.—Elevation, 600 feet
Record: January, 1913, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.35	2.02	7.67	1.38	4.53	4.32	6.33	1.96	4.74	4.51	6.53	6.19	53.53
1943	3.10	1.69	3.84	3.82	6.70	3.52	6.12	2.73	2.14	6.49	6.01	0.76	46.92
1944	1.68	2.43	5.04	3.89	1.15	4.81	4.69	1.46	4.54	2.26	6.57	3.63	42.15
1945	4.18	4.46	2.17	6.13	7.77	6.37	8.44	4.22	4.22	2.34	4.10	4.25	58.65
1946	2.79	3.89	1.19	2.25	6.09	4.03	4.55	1.98	5.19	1.80	1.00	3.71	38.47
1947	3.68	2.53	4.64	5.15	3.19	3.63	6.12	2.55	2.03	3.78	5.82	2.63	45.75
1948	2.93	2.81	3.83	3.02	6.10	8.39	1.87	3.70	2.19	1.41	4.28	11.64	52.17
1949	5.08	4.77	1.29	3.98	3.55	1.07	3.49	2.43	3.09	2.21	1.98	2.82	35.76
1950	5.34	4.39	3.29	3.11	4.68	3.02	2.24	2.72	1.34	2.49	9.72	4.77	47.11
Av. 38 yrs.	3.53	3.14	3.63	3.68	4.01	4.25	4.07	3.73	3.88	3.26	4.22	3.53	44.93

CHESTERFIELD, MASS.—Elevation, 1,410 feet
Record: October, 1919, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.00	1.87	6.43	1.53	5.18	4.05	6.12	3.35	5.10	4.57	5.20	5.51	51.89
1943	2.74	1.39	3.43	3.52	6.21	3.05	6.29	1.62	2.09	7.12	6.69	0.57	44.72
1944	1.51	2.37	4.53	4.31	1.54	6.33	3.41	1.70	6.04	1.94	5.78	4.15	43.61
1945	3.55	3.98	2.42	6.10	8.45	8.53	6.75	4.44	3.07	2.58	4.32	3.64	57.83
1946	2.33	3.50	1.15	2.14	6.39	4.82	5.07	2.46	6.51	1.65	1.23	3.48	40.73
1947	3.48	2.12	4.03	3.07	4.12	3.77	4.18	4.26	3.46	2.78	5.64	2.82	43.73
1948	2.44	2.95	2.99	3.18	7.26	7.53	2.97	3.51	2.17	2.02	4.07	10.01	51.10
1949	5.22	3.45	1.43	4.62	4.65	1.94	4.46	3.16	3.49	3.11	1.92	2.45	39.90
1950	5.32	4.95	3.56	3.82	5.25	3.12	3.14	2.69	1.71	2.59	7.59	4.96	48.70
Av. 31 yrs.	3.32	2.96	3.68	3.84	4.39	4.84	4.28	3.86	4.59	3.43	4.41	3.46	47.06

CHICOPEE, MASS. (Westover Field)—Elevation, 242 feet
Record: February, 1942, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	—	2.11	4.58	0.50	4.71	3.94	4.74	1.22	4.09	3.40	7.33	5.92	Inc.
1943	2.61	1.38	3.52	4.90	6.16	3.25	5.73	1.09	1.13	3.81	5.35	0.67	39.60
1944	1.25	2.52	3.72	4.57	1.21	4.80	2.32	3.23	7.24	2.09	5.44	2.40	40.79
1945	3.27	3.81	2.25	6.21	7.57	6.01	6.88	3.63	2.10	2.30	4.06	5.44	53.53
1946	3.38	3.77	1.28	2.74	5.20	5.67	4.84	3.92	3.19	1.46	0.79	2.59	38.83
1947	2.70	3.47	2.55	5.45	4.10	2.38	3.31	2.06	2.54	2.32	5.39	3.00	39.27
1948	4.38	1.47	2.50	2.93	5.40	7.07	4.31	3.23	1.18	1.14	6.43	2.99	43.03
1949	7.11	3.46	2.20	2.58	5.56	0.33	3.27	5.26	*2.60	4.06	3.20	4.78	*44.41
1950	6.12	5.05	2.12	3.86	4.25	5.52	2.19	5.22	2.45	1.54	7.11	5.39	50.82
Av. 8 yrs.	3.85	3.12	2.52	4.16	4.93	4.38	4.11	3.46	2.80	2.34	4.72	3.41	43.80

*Estimated.

CHICOPEE, MASS. (Water Works Treatment Plant)—Elevation, 140 feet
Record: January, 1935, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1935	5.16	2.58	1.86	2.28	2.31	5.69	4.43	0.74	4.29	0.72	4.54	1.34	35.94
1936	6.30	3.00	7.00	4.73	3.50	5.45	3.50	2.84	3.49	3.59	1.47	6.12	50.99
1937	5.21	1.78	3.75	4.01	5.11	5.27	3.20	4.83	4.29	4.65	6.46	2.63	51.19
1938	5.52	2.14	2.50	2.92	3.46	7.89	9.33	2.57	12.43	2.74	3.31	3.91	58.72
1939	2.76	4.10	4.20	4.56	1.12	3.44	1.31	4.94	3.43	5.25	1.13	3.43	39.67
1940	3.06	2.85	5.62	6.32	6.45	2.79	3.36	1.17	2.25	1.60	6.61	2.52	44.60
1941	2.53	1.65	2.15	0.82	2.14	3.68	4.65	2.45	1.43	2.01	3.91	4.19	31.61
1942	4.25	1.61	7.20	0.57	3.92	3.80	5.43	2.22	5.08	4.50	5.48	6.47	50.53
1943	3.12	1.38	3.79	3.26	5.82	3.32	6.18	1.01	1.13	4.32	5.19	0.63	39.15
1944	1.69	2.16	4.65	4.76	1.45	4.35	2.37	3.62	7.56	1.95	5.21	2.96	42.73
1945	3.19	3.54	2.14	6.21	7.43	6.74	6.58	4.34	2.25	2.50	4.23	5.38	54.53
1946	2.88	2.83	1.79	2.11	6.03	3.17	3.97	4.57	3.99	1.29	1.03	3.21	36.87
1947	2.97	2.76	2.66	5.32	4.16	3.44	4.37	2.68	4.12	2.95	5.06	2.64	43.13
1948	2.95	2.06	3.45	3.01	6.15	6.93	4.08	2.85	1.79	0.85	6.36	3.41	43.89
1949	5.03	3.58	1.81	3.54	4.91	0.42	3.41	7.54	2.59	2.29	1.92	3.25	40.29
1950	4.48	3.88	3.28	3.45	3.84	3.24	2.29	3.72	1.32	1.48	4.63	4.53	40.14
Av. 16 yrs.	3.82	2.62	3.62	3.62	4.24	4.35	4.28	3.26	3.84	2.67	4.16	3.54	44.02

CLINTON, MASS. (Metropolitan Water Works)—Elevation, 370 feet
Record: January, 1902, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	4.30	3.16	7.53	1.40	2.45	5.57	6.40	2.09	2.46	2.65	5.21	6.00	49.22
1943	3.86	1.49	4.22	3.63	5.08	2.19	4.48	1.76	0.85	6.37	5.08	0.71	39.72
1944	1.84	2.36	4.93	4.13	0.93	7.22	0.88	3.51	5.64	2.32	5.63	3.84	43.23
1945	4.89	4.41	2.73	4.14	4.73	5.53	4.60	5.43	1.73	1.92	6.35	5.91	52.37
1946	3.52	3.53	1.84	2.96	6.89	3.04	2.85	7.23	4.73	0.96	1.23	3.81	42.59
1947	3.22	2.64	3.43	4.26	5.17	3.81	4.50	6.24	3.82	1.32	5.14	3.71	47.26
1948	4.06	2.58	3.62	3.19	7.24	5.68	5.20	1.72	0.55	3.47	7.62	1.84	46.77
1949	3.80	3.75	2.37	5.03	3.60	0.49	1.22	1.31	3.72	2.03	2.54	2.50	32.36
1950	4.78	4.29	3.60	3.32	1.84	2.01	2.67	2.60	1.72	2.67	4.67	3.65	37.82
Av. 49 yrs.	3.92	3.62	4.13	3.83	3.42	4.03	3.75	3.68	3.80	3.10	3.91	3.82	45.01

COHASSET, MASS. (Beechwood)—Elevation, 40 feet
Record: June, 1935, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.68	3.14	8.09	1.26	1.91	4.24	5.00	2.54	2.71	4.20	7.74	4.46	48.97
1943	3.03	1.61	3.22	3.42	6.12	2.22	3.96	1.55	2.89	4.20	3.79	1.42	37.43
1944	2.59	1.99	4.60	4.01	0.30	4.28	1.28	0.65	8.75	4.18	7.49	3.80	43.92
1945	3.90	3.81	2.37	2.61	5.72	5.73	2.93	5.78	2.70	4.07	10.00	10.88	60.50
1946	4.42	3.40	1.47	2.97	5.04	4.37	1.47	11.27	2.89	0.42	1.08	4.71	43.51
1947	3.07	0.96	3.06	4.67	4.57	5.87	5.30	2.54	5.68	3.31	5.94	4.27	49.24
1948	6.11	1.98	2.94	2.65	7.22	4.65	7.17	2.88	1.23	6.38	6.61	1.80	52.12
1949	3.88	3.72	1.62	3.50	4.16	0.41	3.19	2.25	4.06	1.61	4.12	2.00	34.52
1950	4.08	3.39	3.27	3.75	1.70	2.54	1.84	8.42	2.00	1.81	7.16	3.58	43.54
Av. 15 yrs.	3.80	2.68	3.54	3.63	3.75	3.98	3.42	4.16	4.18	3.40	5.05	4.19	45.78

COLRAIN, MASS.—Elevation, 500 feet
Record: January, 1913, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.25	2.44	6.62	1.33	5.52	2.36	7.25	1.93	5.22	5.08	5.06	5.94	52.01
1943	2.66	1.40	3.16	4.52	6.89	2.83	6.47	3.37	1.94	6.98	5.91	0.57	46.70
1944	1.68	2.21	5.36	4.47	1.48	6.85	3.96	2.27	6.65	2.19	4.39	4.04	45.55
1945	3.67	4.22	1.23	6.99	8.03	6.29	6.62	2.85	3.79	3.05	4.20	3.27	54.21
1946	2.93	3.13	1.51	2.51	6.20	4.14	3.35	4.70	5.36	1.57	1.05	4.61	41.06
1947	4.10	2.81	3.18	4.82	4.36	3.70	3.18	4.13	4.69	1.55	5.38	2.62	44.52
1948	2.51	2.92	2.60	3.98	8.31	6.46	1.53	1.65	1.24	1.74	5.68	4.39	43.01
1949	4.21	3.22	1.54	4.85	3.20	0.95	3.30	4.95	3.66	2.43	1.77	1.86	35.94
1950	5.08	4.42	3.58	3.10	4.47	3.20	2.92	5.21	1.47	2.50	6.30	4.86	47.06
Av. 38 yrs.	3.42	3.00	3.66	3.97	4.05	3.90	3.98	3.73	4.00	3.31	4.15	3.36	44.53

CONCORD, MASS.
Record: January, 1891, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.23	3.31	6.79	1.54	2.43	4.99	4.96	2.47	2.06	3.13	4.65	6.45	46.01
1943	2.84	1.27	4.32	3.04	4.62	2.77	4.90	1.40	0.64	4.77	4.16	0.99	35.72
1944	2.19	2.25	4.52	3.45	0.88	6.01	1.47	1.79	5.30	1.67	4.76	2.76	37.05
1945	3.03	4.04	1.83	2.71	4.44	5.75	3.33	3.29	1.21	2.33	5.64	6.10	43.70
1946	3.36	3.35	1.51	2.58	5.37	3.08	2.21	8.07	2.14	0.64	1.16	4.20	37.67
1947	2.87	1.81	2.95	3.93	4.41	3.35	5.59	2.52	2.73	0.71	4.90	3.83	39.40
1948	4.51	2.36	2.88	2.41	5.60	5.68	5.13	1.90	0.29	2.77	5.70	1.69	40.92
1949	4.08	2.21	2.15	3.24	3.11	0.93	1.36	0.86	5.20	1.80	2.00	*2.61	29.55
1950	*4.28	*3.31	*3.64	2.66	1.50	1.18	1.93	4.97	1.83	1.98	5.03	*3.32	*35.63
Av. 60 yrs.	3.36	3.13	3.50	3.36	3.14	3.45	3.42	3.37	3.58	2.89	3.46	3.38	40.04

*Estimated.

CUMMINGTON, MASS.—Elevation, 1,020 feet
Record: April, 1903, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.37	2.22	7.83	1.81	4.84	2.59	6.54	3.56	4.85	4.74	5.00	6.64	53.99
1943	3.29	1.73	3.76	4.56	7.15	3.72	5.89	1.97	1.02	5.62	6.55	0.76	46.02
1944	1.78	2.54	5.17	4.47	1.91	5.96	4.29	1.05	6.29	1.87	5.52	4.26	45.11
1945	4.22	4.41	2.92	6.35	7.24	6.57	6.91	2.95	3.53	2.96	4.15	4.07	56.28
1946	3.09	4.26	1.37	2.65	6.45	5.88	4.47	2.48	6.69	2.07	1.32	4.02	44.75
1947	4.19	2.87	5.12	5.00	3.46	3.00	4.38	2.42	3.09	2.40	5.44	3.35	44.72
1948	3.14	3.31	3.85	2.49	7.20	8.07	1.56	2.08	1.36	1.80	4.60	10.14	49.60
1949	5.28	4.26	2.37	4.48	4.40	2.02	3.65	3.41	3.07	2.49	1.78	2.48	39.69
1950	5.77	4.28	3.42	3.15	4.71	2.82	3.50	3.60	1.51	2.24	7.38	4.44	46.82
Av. 33 yrs.	3.84	3.29	3.95	4.07	3.97	4.46	3.93	3.65	4.32	3.25	4.38	3.81	46.92

DALTON, MASS.—Elevation, 1,200 feet
Record: January, 1906, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	2.57	1.47	6.29	1.66	4.64	3.95	6.99	2.98	6.73	4.67	5.44	5.04	52.43
1943	2.69	1.41	3.23	4.69	7.52	4.34	6.74	3.54	1.20	4.11	5.62	0.71	45.80
1944	1.85	2.33	3.68	3.99	2.96	4.83	6.98	2.91	6.31	2.29	4.21	3.55	45.89
1945	3.51	3.96	2.12	7.39	6.81	8.85	9.90	3.42	2.98	3.37	5.53	3.13	60.97
1946	2.64	3.74	1.25	2.21	7.05	6.75	4.42	3.09	6.91	2.63	1.54	3.41	45.64
1947	4.01	2.60	5.10	3.50	4.75	4.18	4.04	1.46	3.83	2.50	4.70	2.89	43.56
1948	2.50	2.90	3.84	4.64	8.06	7.82	2.21	2.66	1.12	1.81	4.31	10.56	52.43
1949	4.70	3.35	1.40	3.67	3.79	2.60	6.30	2.65	4.76	2.61	1.59	3.06	40.48
1950	4.76	3.76	2.17	3.17	2.96	3.63	4.61	3.88	2.07	1.56	6.61	2.89	42.07
Av. 45 yrs.	3.30	2.78	3.51	3.59	3.88	3.95	4.54	3.69	4.07	3.06	3.67	3.19	43.23

DEERFIELD, MASS. (South Deerfield)—Elevation, 210 feet
Record: June, 1934, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.86	2.25	7.54	1.21	5.38	2.90	6.07	4.82	5.97	4.43	5.42	7.43	57.28
1943	3.04	1.74	4.21	3.96	4.84	2.62	7.39	3.24	1.26	5.35	5.66	0.72	44.03
1944	1.77	2.30	5.11	4.48	1.78	6.13	3.67	2.07	6.25	2.23	4.82	3.20	43.81
1945	4.66	4.49	—	—	—	—	—	—	—	—	—	—	—
1946	—	—	—	—	—	—	—	—	6.68	1.57	0.76	3.56	—
1947	3.41	2.01	3.54	4.42	4.60	3.54	4.02	3.61	3.09	2.57	6.12	2.31	43.24
1948	2.36	1.66	3.02	2.85	6.65	7.25	1.49	1.90	2.31	1.25	4.92	4.13	39.79
1949	5.09	3.47	1.12	3.58	4.39	1.14	3.36	3.49	2.75	2.87	2.29	2.76	36.31
1950	5.30	3.98	3.52	3.76	4.25	3.47	2.21	3.45	1.32	2.21	5.84	4.91	44.22
Av. 14 yrs.	4.25	2.76	4.15	3.90	4.24	4.67	4.16	3.48	3.95	2.92	4.58	3.80	46.86

DEERFIELD RIVER WATERSHED, MASS. (Above Charlemont)
Record: July, 1913, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	2.82	3.34	6.38	2.52	5.07	3.09	6.51	1.82	5.62	3.59	5.88	5.71	52.35
1943	3.26	2.43	3.36	4.51	8.29	3.50	4.88	5.04	1.72	5.88	6.34	0.81	50.02
1944	1.65	3.08	5.49	4.73	1.53	7.22	4.70	2.04	6.36	2.48	3.38	4.56	47.22
1945	4.62	4.97	1.92	7.30	7.82	6.84	7.46	2.30	4.03	4.21	5.14	3.15	59.76
1946	3.28	4.04	1.75	2.92	7.43	4.89	3.88	4.12	5.10	3.16	2.14	5.78	48.49
1947	4.78	2.91	5.95	4.80	6.14	5.26	6.07	4.84	2.48	1.61	5.72	3.29	53.85
1948	3.19	3.72	4.47	4.60	8.64	5.58	2.54	2.45	0.93	1.99	6.35	8.38	52.84
1949	6.50	3.47	2.86	4.74	4.26	1.74	3.94	4.38	5.43	2.67	2.56	3.37	45.92
1950	6.51	5.07	4.44	3.36	4.56	4.02	3.49	6.06	4.43	2.89	7.00	4.56	56.39
Av. 37 yrs.	3.86	3.38	3.92	4.14	4.31	4.33	4.48	4.02	4.23	3.44	4.39	3.84	48.34

DUDLEY, MASS. (Stevens Linen Works)—Elevation, 450 feet
Record: January, 1892, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.95	2.66	7.81	0.95	2.23	3.04	4.20	2.42	1.88	3.75	4.87	6.49	44.25
1943	3.72	1.42	4.28	3.51	4.17	1.86	4.37	0.99	0.57	5.09	4.02	1.03	35.03
1944	1.22	2.19	4.88	5.22	1.13	4.58	1.75	1.12	8.16	1.80	5.82	3.24	41.11
1945	3.33	3.66	2.23	3.88	5.69	4.74	2.25	2.84	1.04	2.15	6.86	5.88	44.55
1946	3.73	3.52	1.38	2.17	5.29	4.77	2.04	4.01	1.46	1.80	1.29	3.40	34.86
1947	0.88	2.31	2.91	3.64	2.52	*2.26	*3.99	*2.00	2.27	1.68	3.16	2.67	*30.29
1948	2.48	1.65	3.73	2.65	6.04	3.98	*5.09	*2.04	*0.86	*2.26	*5.91	*3.29	*39.98
1949	0.63	2.96	2.43	2.83	4.01	0.09	1.26	2.16	4.06	1.62	2.33	1.60	25.98
1950	4.45	2.24	2.88	3.41	3.13	3.07	2.01	4.39	1.33	1.65	6.24	3.38	38.18
Av. 59 yrs.	3.34	3.10	3.93	3.38	3.80	3.52	3.45	3.63	3.70	3.04	3.62	3.52	41.53

*Estimated.

EGREMONT, MASS. (South Egremont)—Elevation, 750 feet
Record: January, 1903, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.97	1.55	5.63	1.39	3.28	2.54	5.41	3.20	5.55	4.72	5.22	6.13	48.59
1943	3.50	1.67	3.60	3.06	5.70	3.53	5.31	1.97	1.16	4.74	4.87	0.67	39.78
1944	1.26	2.32	4.76	3.19	1.79	6.95	5.20	1.74	4.67	2.30	4.28	2.10	40.56
1945	3.74	3.08	1.73	5.61	6.62	5.61	13.50	3.62	4.00	2.46	4.43	3.84	58.24
1946	1.81	3.17	1.35	1.84	5.70	3.33	4.48	2.77	5.46	1.90	0.85	2.78	35.44
1947	3.33	1.83	3.22	4.36	4.63	3.01	3.41	3.24	2.76	3.14	5.14	2.07	40.14
1948	2.36	1.99	4.67	2.78	6.29	7.63	2.98	1.53	1.50	1.45	3.79	11.59	48.56
1949	4.34	2.26	1.11	3.14	4.50	1.25	4.93	3.76	3.84	2.07	1.59	3.45	36.24
1950	4.04	3.39	2.40	2.76	3.06	5.62	4.14	3.05	1.29	1.85	6.09	3.77	41.46
Av. 45 yrs.	3.08	2.72	2.84	3.32	3.57	4.33	4.50	4.29	3.91	3.17	3.41	3.18	42.32

FALL RIVER, MASS. (Water Works Pumping Station)—Elevation, 210 feet
Record: January, 1873, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	4.47	3.37	8.91	1.01	1.53	1.52	2.54	6.72	2.08	4.11	5.29	4.57	46.12
1943	3.60	1.84	3.48	3.42	2.75	1.35	2.60	2.67	1.54	3.92	2.85	1.46	31.48
1944	2.56	2.40	5.16	3.95	0.72	3.54	0.59	1.63	6.17	1.93	7.96	3.23	39.84
1945	4.17	4.45	2.53	2.65	3.85	3.18	1.59	2.27	1.09	3.53	8.80	8.91	47.02
1946	4.42	2.36	2.09	2.21	4.63	3.75	2.00	14.84	2.32	0.68	1.14	3.67	44.11
1947	3.32	2.03	3.18	4.58	5.63	3.63	4.36	2.13	2.30	3.90	4.89	3.16	43.11
1948	6.41	2.61	3.84	3.98	9.29	2.68	4.66	1.27	1.97	4.80	5.86	2.73	50.10
1949	4.31	4.46	2.98	5.24	3.40	0.02	1.53	2.45	2.57	1.03	3.50	3.01	34.50
1950	4.61	5.13	3.77	2.48	2.20	2.68	0.76	3.44	1.46	1.34	5.80	4.54	38.21
Av. 78 yrs.	4.33	3.80	4.44	3.99	3.39	3.07	3.21	4.05	3.26	3.70	4.25	3.94	45.43

FALL RIVER, MASS. (U.S. Weather Bureau)—Elevation, 190 feet
Record: January, 1893, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	4.22	3.10	7.53	1.16	2.03	2.10	2.88	7.24	1.66	4.00	5.20	4.05	46.17
1943	3.32	2.05	3.48	3.00	3.71	1.26	2.51	3.01	1.14	4.10	2.81	1.36	31.75
1944	2.30	2.12	4.66	3.95	0.82	3.97	0.99	1.94	6.80	1.68	7.54	3.16	39.84
1945	4.00	3.81	2.41	2.63	4.16	3.33	1.26	2.44	1.33	3.14	8.12	7.23	43.86
1946	3.66	2.61	2.18	2.24	4.39	3.45	1.73	16.10	2.44	1.03	1.04	3.18	44.05
1947	3.51	1.29	2.76	4.54	5.73	3.88	5.06	2.00	3.65	2.97	4.66	3.10	43.15
1948	6.22	2.69	3.92	3.84	10.33	2.93	6.53	1.50	2.06	3.89	5.93	2.42	52.26
1949	4.27	4.35	2.68	5.27	3.39	0.02	1.87	2.94	2.92	1.28	3.16	2.52	34.67
1950	4.39	4.05	3.33	2.57	2.23	3.26	1.09	3.72	1.46	1.40	6.24	4.36	38.10
Av. 58 yrs.	4.03	3.66	4.10	3.96	3.40	3.14	3.12	4.10	3.37	3.48	3.84	4.06	44.26

FALMOUTH, MASS. (Hatchville)—Elevation, 70 feet
Record: January, 1919, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	4.62	3.29	7.95	0.61	2.28	3.02	2.51	7.18	4.38	4.40	4.21	3.53	48.03
1943	4.50	2.25	3.89	3.85	3.88	1.97	4.52	6.20	3.04	3.21	3.11	1.48	41.90
1944	3.40	2.06	5.51	5.70	0.92	2.05	0.63	1.55	4.13	3.01	10.92	3.74	43.62
1945	3.74	4.00	2.33	1.77	4.14	5.75	1.08	2.39	1.19	3.32	10.10	6.61	46.42
1946	3.99	2.71	1.57	3.19	5.55	3.00	2.42	13.87	1.64	0.19	0.81	3.77	42.71
1947	4.14	1.92	2.74	7.20	3.62	3.40	3.04	0.62	1.62	2.98	3.47	3.19	37.94
1948	6.17	2.73	3.59	4.94	8.12	2.19	1.66	1.88	2.29	5.76	4.85	2.42	46.60
1949	4.19	5.16	2.62	4.79	3.81	0.00	0.98	1.54	2.35	1.66	3.37	3.01	33.48
1950	3.15	4.39	4.47	3.98	2.67	3.83	1.90	4.13	3.24	1.04	6.25	4.14	43.19
Av. 32 yrs.	3.88	3.33	4.23	4.10	3.51	3.70	2.96	4.37	3.97	3.66	4.28	3.67	45.66

FITCHBURG, MASS. (Sentinel Office)—Roof Gage
Record: June, 1927, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	4.02	2.94	6.95	1.33	2.93	5.84	4.93	2.38	2.73	3.59	4.94	5.21	47.79
1943	3.82	1.01	3.03	3.05	6.29	2.01	4.11	2.23	1.22	6.31	5.58	0.71	39.37
1944	1.79	2.67	4.27	4.78	1.31	12.29	2.88	0.46	8.15	1.84	4.04	3.46	47.94
1945	3.69	4.51	1.83	4.45	5.87	7.53	4.44	3.65	2.23	2.33	5.92	5.58	52.03
1946	3.17	3.64	1.59	2.94	7.44	4.57	4.56	4.96	5.54	3.92	0.93	4.55	47.81
1947	3.23	2.40	3.09	4.50	3.16	4.05	2.72	1.39	2.83	1.33	7.20	3.81	39.71
1948	3.60	2.51	2.96	3.24	6.84	5.49	3.41	1.30	1.68	3.08	6.65	2.90	43.66
1949	4.57	3.24	1.39	4.71	4.04	0.92	1.68	2.86	3.04	2.04	1.95	2.32	32.76
1950	4.69	3.48	3.73	3.24	2.54	2.44	1.49	3.19	2.07	2.55	5.76	4.64	39.82
Av. 23 yrs.	3.60	2.95	3.89	4.14	3.89	4.70	3.43	3.25	3.98	3.16	3.95	3.38	44.32

FITCHBURG, MASS. (Sewage Works)—Elevation, 400 feet
Record: January, 1920, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.39	3.88	6.73	1.53	3.25	6.43	5.14	1.94	2.34	2.97	5.02	5.58	48.20
1943	4.12	1.44	3.57	3.52	5.85	1.97	4.00	3.31	1.26	6.15	4.93	0.73	40.85
1944	1.73	2.70	4.36	4.40	1.29	11.56	1.94	0.54	6.41	1.86	3.45	3.23	43.47
1945	3.58	4.73	1.78	4.17	5.11	6.36	4.23	3.12	2.11	2.14	5.37	5.61	48.31
1946	3.66	3.80	1.59	2.52	6.15	3.95	4.32	4.77	5.54	0.72	0.94	4.07	42.03
1947	2.95	2.04	2.58	4.80	3.37	3.41	2.90	1.44	3.19	1.34	7.34	3.51	38.87
1948	3.66	2.02	2.77	3.14	6.66	5.84	3.58	1.61	0.38	3.05	6.88	1.50	41.09
1949	4.27	2.94	2.15	4.84	3.87	1.08	1.29	1.38	4.65	2.24	2.14	1.90	32.75
1950	4.48	3.78	4.06	3.23	2.28	2.05	2.34	*3.20	1.69	3.16	5.88	4.40	*40.55
Av. 31 yrs.	3.72	3.20	3.72	3.96	3.57	4.05	3.48	3.09	3.66	2.91	4.10	3.61	43.07

*Estimated.

FLORIDA, MASS. (Hoosac Tunnel)—Elevation, 800 feet
Record: May, 1930, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	2.74	2.83	7.11	2.38	4.58	2.43	6.38	1.58	4.64	3.18	7.07	6.06	50.98
1943	3.20	1.92	3.12	4.28	8.67	3.04	7.41	3.77	0.94	5.30	5.71	0.71	48.07
1944	1.64	2.69	4.96	4.22	1.32	6.71	4.24	1.25	6.51	2.33	2.79	4.31	42.97
1945	4.04	4.21	1.77	7.11	6.62	6.56	6.69	2.89	3.19	3.39	4.44	2.53	53.44
1946	2.80	3.54	1.86	2.59	6.73	4.69	4.19	3.35	5.62	3.09	1.56	4.77	44.79
1947	4.42	1.84	5.11	4.90	4.80	4.34	4.58	2.51	2.78	1.25	5.17	2.25	43.95
1948	2.85	3.58	3.76	4.14	7.79	6.55	2.65	2.19	1.61	1.70	5.21	7.65	49.68
1949	7.31	3.16	2.38	4.46	3.48	1.63	4.83	2.92	3.99	2.57	2.56	2.82	42.11
1950	5.92	4.51	3.45	2.96	4.54	4.01	3.95	3.39	3.06	2.08	7.34	3.77	48.98
Av. 20 yrs.	4.04	3.03	3.87	4.13	4.34	4.25	4.46	3.30	4.40	2.88	3.99	3.77	46.46

FRAMINGHAM, MASS.—Elevation, 160 feet
Record: January, 1876, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.62	3.71	7.02	1.73	2.19	3.47	8.01	2.18	1.88	3.11	4.99	6.90	48.81
1943	3.28	1.49	3.85	3.56	4.43	2.04	4.29	1.87	0.85	5.60	3.83	1.15	36.24
1944	1.71	2.66	4.67	4.52	0.89	5.71	2.08	1.33	5.96	1.99	6.43	3.50	41.45
1945	3.12	4.76	2.10	2.98	4.88	5.51	2.95	4.21	1.35	2.19	6.98	6.74	47.77
1946	3.79	3.42	1.64	2.85	5.09	2.89	1.92	8.70	4.66	0.50	1.28	4.19	40.93
1947	3.20	2.08	3.34	4.61	4.05	3.25	4.88	1.55	3.74	1.17	5.56	4.21	41.64
1948	5.58	2.37	3.58	2.91	5.99	4.87	5.05	1.73	0.85	2.86	6.56	1.74	44.09
1949	3.73	3.19	2.00	3.89	3.74	0.95	1.60	4.79	3.27	1.58	2.53	2.27	33.54
1950	4.14	4.26	3.59	3.44	1.75	2.21	2.00	6.95	1.76	2.28	6.80	3.76	42.94
Av. 75 yrs.	3.96	3.78	4.17	3.62	3.24	3.31	3.54	3.72	3.46	3.27	3.86	3.79	43.72

FRANKLIN, MASS. (Water Works)—Elevation, 240 feet
Record: July, 1922, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	4.43	3.01	7.76	1.03	2.27	3.29	5.03	3.13	1.89	3.80	5.76	5.50	46.90
1943	3.60	1.26	3.63	4.20	5.16	2.38	5.15	1.61	0.75	5.97	3.11	1.01	37.83
1944	1.46	2.16	4.38	4.20	1.93	5.06	0.74	0.85	7.92	3.26	6.84	3.67	42.47
1945	3.02	4.03	1.83	3.07	4.94	5.31	2.88	6.04	1.56	2.32	8.48	7.08	50.56
1946	2.77	3.05	1.66	2.52	5.16	4.23	1.69	9.90	3.82	0.43	0.93	3.96	41.12
1947	2.71	1.51	3.15	4.79	4.91	4.00	3.51	2.54	5.68	1.56	6.55	3.47	44.38
1948	5.23	1.80	3.04	3.18	6.40	3.93	6.43	1.71	0.96	3.75	5.86	1.96	44.25
1949	3.49	3.24	1.76	3.95	3.16	0.27	0.62	6.02	3.23	1.58	3.61	*1.60	*32.53
1950	3.36	3.80	3.57	3.62	1.94	2.30	3.33	4.09	1.70	2.45	6.12	3.71	39.99
Av. 28 yrs.	3.66	2.84	3.52	3.55	3.18	3.61	3.27	4.07	3.41	3.06	3.87	3.47	41.51

*Estimated.

FRANKLIN, MASS.—Elevation, 320 feet
Record: September, 1941, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1941	—	—	—	—	—	—	—	—	0.26	1.40	2.70	3.80	—
1942	4.43	3.01	7.76	1.03	2.27	3.29	5.03	3.13	1.89	3.80	5.76	5.50	46.90
1943	3.60	1.26	3.63	4.20	5.16	2.38	5.15	1.61	0.75	5.97	3.11	1.01	37.83
1944	1.46	2.16	4.38	4.20	1.93	5.06	1.07	0.96	7.48	3.28	6.48	3.55	42.01
1945	2.79	5.35	2.10	3.26	4.45	5.55	3.33	5.14	1.77	2.48	8.27	6.70	51.19
1946	3.72	3.47	1.91	2.32	5.83	4.67	1.78	10.45	3.21	0.51	0.97	3.95	42.79
1947	2.50	1.42	3.22	4.68	4.55	4.21	3.47	2.75	4.68	1.58	6.32	3.99	43.37
1948	5.77	1.79	3.25	3.04	6.48	4.01	6.51	1.88	1.09	4.15	6.16	2.29	46.42
1949	3.90	3.37	1.67	4.36	3.84	0.26	0.57	6.80	3.79	1.80	3.08	1.47	34.91
1950	4.05	4.45	3.70	4.11	2.19	2.42	3.16	4.46	1.74	2.60	6.71	4.26	43.85
Av. 9 yrs.	3.58	2.92	3.51	3.47	4.08	3.54	3.34	4.13	2.93	2.91	5.21	3.64	43.26

GARDNER, MASS.—Elevation, 1,110 feet
Record: July, 1906, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.69	1.94	7.07	1.27	3.72	5.46	6.15	2.12	3.18	3.77	4.28	3.78	46.43
1943	2.83	1.37	2.56	4.03	5.48	1.77	5.31	2.90	1.35	5.27	4.99	0.53	38.39
1944	1.50	1.87	4.02	3.45	1.28	8.23	3.41	0.45	7.13	1.57	3.40	3.62	39.93
1945	2.75	3.61	1.27	4.78	5.24	5.76	5.52	3.46	1.56	2.78	3.33	3.84	43.90
1946	2.78	3.44	1.46	1.84	6.01	4.39	3.08	5.59	5.93	0.90	0.89	3.08	39.39
1947	2.55	2.11	3.27	3.26	2.28	3.47	5.53	3.62	3.41	0.97	5.94	2.04	38.45
1948	2.45	2.18	2.84	2.93	6.07	5.16	3.98	1.76	1.24	1.81	6.38	2.91	39.71
1949	4.09	2.79	1.32	4.40	4.52	0.70	2.42	2.79	3.27	2.10	1.77	2.45	32.62
1950	3.84	2.65	2.40	3.00	2.37	3.64	2.80	3.29	1.24	3.12	6.93	2.12	37.40
Av. 44 yrs.	3.29	3.03	3.48	3.57	3.30	3.94	3.85	3.72	3.84	2.88	3.79	3.23	41.92

GLOUCESTER, MASS. (Water Works)—Elevation, 40 feet
Record: January, 1915, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.82	4.33	7.29	1.66	2.37	5.25	4.15	4.26	2.39	2.51	5.73	4.17	47.93
1943	3.07	1.35	2.98	2.65	5.84	1.20	3.49	1.45	2.61	4.86	3.25	1.28	34.03
1944	2.51	3.15	3.75	3.82	0.32	4.85	1.28	1.59	5.35	2.22	7.26	3.60	39.70
1945	4.48	4.54	2.00	2.49	4.03	5.58	3.43	3.04	1.51	2.93	8.50	11.17	53.70
1946	4.82	3.55	1.53	3.26	6.15	2.58	1.26	10.43	2.74	0.52	1.64	4.47	42.95
1947	3.01	1.08	2.71	4.90	4.26	2.77	4.95	1.90	3.13	0.59	5.72	4.57	39.59
1948	6.50	2.49	3.56	2.98	5.52	4.96	3.78	1.01	0.17	4.66	5.35	2.44	43.42
1949	4.87	3.98	1.55	3.29	3.15	0.39	2.39	2.52	5.87	1.69	4.26	2.07	36.03
1950	5.00	3.84	3.60	1.49	1 23	1.30	1.62	2.90	0.83	1.61	6.31	3.27	33.00
Av. 36 yrs.	4.12	3.49	4.16	4.12	3.34	3.86	3.50	3.32	3.71	3.21	4.25	4.12	45.20

GLOUCESTER, MASS. (Eastern Point)—Elevation, 15 feet
Record: April, 1930, to December, 1946

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.18	4.69	6.81	1.82	2.72	5.57	4.73	4.25	2.26	2.46	5.65	4.66	48.80
1943	4.17	1.27	3.72	2.63	5.37	1.48	3.19	1.45	1.65	5.05	3.62	1.27	34.87
1944	2.78	3.16	3.94	3.87	0.81	5.06	1.71	1.10	7.15	2 10	7.21	3.84	43.03
1945	4.94	4.50	1.88	2.64	4.14	5.54	3.77	2.75	2.61	2.96	7.75	10.04	53.52
1946	5.00	4.24	1.49	2.94	5.76	2.64	1.22	11.01	2.63	0.68	1.80	4.67	44.08
Av. 16 yrs.	4.62	3.81	4.48	4.13	3.14	4.06	3.05	3.38	4.28	3.32	4.07	4.13	46.47

GRANVILLE, MASS. (Westfield Water Works)—Elevation, 540 feet
Record: June, 1930, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.42	2.28	5.93	0.81	5.39	3.53	6.67	2.06	4.56	5.00	4.99	5.99	50.63
1943	2.38	1.44	2.70	3.13	6.20	3.74	6.12	1.45	2.50	6.04	4.45	0.58	40.73
1944	1.35	2.10	4.34	3.91	1.34	4.40	1.80	1.13	5.75	2.20	5.12	3.95	37.39
1945	2.88	4.41	2.09	4.74	6.98	5.49	7.92	5.00	3.51	2.57	4.34	4.06	53.99
1946	2.46	2.52	1.50	2.12	6.67	2.75	5.33	2.41	4.70	1.50	0.79	2.81	35.56
1947	3.18	2.23	3.69	4.72	5.12	3.26	5.24	2.13	3.91	3.17	6.71	1.99	45.35
1948	2.43	2.08	3.60	2.87	4.90	6.26	3.95	2.91	1.48	2.06	4.52	9.58	46.64
1949	5.56	3.30	1.35	4.08	4.53	0.71	2.63	2.80	3.17	2.70	1.85	2.85	35.53
1950	4.80	4.57	3.55	3.08	4.42	4.40	2.13	4.24	1.40	3.00	7.02	5.95	48.56
Av. 20 yrs.	3.40	2.96	3.51	3.35	4.27	3.72	3.89	4.03	3.83	3.61	3.68	3.43	43.68

GRANVILLE, MASS. (Borden Brook Reservoir)—Elevation, 950 feet
Record: January, 1914, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.75	2.67	6.98	1.28	5.81	4.11	5.91	2.24	6.27	4.84	5.79	6.63	56.28
1943	3.60	2.07	3.76	3.15	5.63	3.73	8.53	1.31	2.39	6.47	5.53	0.99	47.16
1944	2.21	2.87	5.55	4.32	0.93	5.03	2.28	2.40	7.16	2.06	7.51	5.13	47.45
1945	4.54	4.99	2.12	4.91	8.01	7.01	7.49	4.51	6.28	2.68	4.53	5.05	62.12
1946	2.96	3.14	1.67	2.29	7.79	3.33	5.11	3.36	4.66	1.75	1.07	2.94	40.07
1947	4.16	2.98	3.95	5.05	4.93	3.65	6.13	2.63	3.59	3.06	5.41	3.03	48.57
1948	3.34	2.51	4.14	3.42	5.69	7.78	2.25	2.19	3.64	2.10	5.20	10.04	52.30
1949	5.86	3.69	1.97	4.70	4.67	1.23	4.44	3.91	3.40	2.56	2.07	3.88	42.38
1950	5.00	4.17	3.84	3.92	5.64	4.18	2.40	3.51	1.72	2.41	8.28	5.40	50.47
Av. 37 yrs.	3.87	3.54	4.20	3.96	4.30	4.56	4.24	4.06	4.36	3.34	4.56	4.04	49.03

GRANVILLE, MASS. (West Granville)—Elevation, 900 feet
Record: July, 1912, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.52	2.49	7.20	1.00	5.77	4.15	6.88	2.67	4.73	3.72	7.18	7.62	56.93
1943	3.12	2.08	2.96	2.58	6.85	3.70	4.59	1.37	3.32	6.81	5.68	0.22	43.28
1944	1.98	2.92	4.17	4.19	1.49	4.98	2.87	1.95	8.03	2.35	4.56	4.74	44.23
1945	3.51	2.50	1.14	5.65	8.29	6.94	7.80	3.62	4.54	2.38	5.42	4.80	56.59
1946	2.84	4.02	1.24	2.46	7.59	3.10	4.82	3.04	3.99	2.43	1.01	1.51	38.05
1947	3.30	2.86	3.81	4.01	5.88	3.64	5.34	1.67	3.51	3.55	6.37	3.03	46.97
1948	2.82	2.47	3.46	3.07	5.62	7.44	3.00	2.66	0.88	2.92	4.65	8.68	47.67
1949	6.68	3.05	3.22	4.09	4.62	1.32	4.51	3.58	3.06	2.77	1.78	2.75	41.43
1950	2.36	3.66	4.34	3.52	4.60	5.05	2.37	4.73	1.58	2.30	9.49	5.23	49.23
Av. 38 yrs.	3.47	3.10	3.73	3.95	4.35	4.43	4.30	4.14	4.17	3.62	4.33	3.26	46.85

GREENFIELD, MASS.—Elevation, 270 feet
Record: April, 1925, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.56	2.14	6.51	1.15	5.19	3.99	5.11	4.37	5.59	4.26	4.35	6.10	52.32
1943	2.44	1.49	3.14	3.97	6.66	1.78	4.66	2.88	2.90	4.73	5.76	0.45	40.86
1944	1.40	2.28	5.04	3.86	1.45	5.80	9.74	2.89	5.55	1.67	3.50	2.67	45.85
1945	2.89	3.84	2.37	6.88	7.79	7.39	5.97	3.13	3.57	2.48	3.43	4.26	54.00
1946	2.99	3.35	1.31	2.17	6.54	3.55	4.65	4.29	5.07	1.69	0.82	3.90	40.33
1947	4.18	2.69	3.29	4.64	4.00	3.53	4.35	2.50	3.67	2.11	5.61	2.37	42.94
1948	2.43	2.91	3.05	3.15	6.98	6.41	2.75	2.06	1.30	1.63	5.55	3.66	41.88
1949	4.61	3.19	1.23	3.55	3.42	1.32	1.91	4.25	2.70	2.51	2.02	2.47	33.18
1950	5.30	3.31	2.99	3.44	4.61	3.67	2.80	5.13	1.54	1.87	5.94	5.04	45.64
Av. 25 yrs.	3.43	2.74	3.48	3.71	4.10	3.96	4.13	3.71	4.00	2.88	3.98	3.35	43.47

GROTON, MASS.—Elevation, 350 feet
Record: July, 1885, to May, 1909
January, 1913, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.87	2.66	7.40	1.50	3.63	3.09	5.79	1.95	2.53	2.62	4.56	5.49	45.09
1943	3.08	1.28	3.52	3.42	5.59	3.03	4.33	2.92	1.26	5.19	5.05	0.74	39.41
1944	1.90	2.46	4.32	4.06	0.80	8.67	2.52	0.98	6.33	2.22	4.92	3.27	42.45
1945	3.11	4.30	1.79	3.81	5.39	6.15	5.60	2.63	1.51	1.98	4.82	5.25	46.34
1946	3.51	3.31	1.71	2.71	6.36	3.14	4.14	6.32	3.92	0.98	0.88	4.27	41.25
1947	3.17	2.39	3.24	4.64	2.90	4.01	3.34	1.58	3.24	0.82	4.79	3.28	37.40
1948	3.76	2.42	3.00	2.59	5.50	5.37	4.61	1.87	0.63	2.10	5.90	1.80	39.55
1949	4.17	2.98	1.38	4.48	3.65	0.77	2.15	2.97	2.49	2.27	2.13	1.98	31.42
1950	4.80	3.67	3.14	2.67	1.70	1.56	2.49	2.98	1.86	2.89	5.86	3.66	37.28
Av. 61 yrs.	3.56	3.37	3.79	3.60	3.48	3.60	3.56	3.58	3.75	3.22	3.73	3.44	42.68

HARDWICK, MASS.—Elevation, 950 feet
Record: May, 1920, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.37	1.71	5.93	0.71	2.99	5.23	5.32	1.76	3.59	3.61	5.73	4.67	44.62
1943	2.58	1.42	3.07	3.32	5.62	1.47	5.96	3.05	1.30	5.08	6.39	0.67	39.93
1944	1.50	1.88	3.98	3.65	1.12	6.96	3.98	2.36	6.87	1.96	3.77	2.91	40.94
1945	2.98	3.71	1.87	6.05	5.97	7.80	7.54	3.11	1.75	2.80	3.36	4.05	50.99
1946	2.30	2.61	1.41	3.65	5.22	5.74	4.22	4.60	4.07	1.00	1.35	3.17	39.34
1948	2.39	2.31	3.49	2.98	5.97	6.53	8.00	2.28	2.41	1.61	6.58	2.37	46.92
1949	4.72	2.89	1.68	2.84	4.88	0.72	3.07	3.84	2.46	2.49	1.96	3.20	34.75
1950	4.63	2.85	2.38	3.43	3.65	4.75	3.48	3.56	1.15	2.05	6.20	4.33	42.46
Av. 29 yrs.	3.34	2.68	3.36	3.83	3.55	4.59	4.51	3.72	4.17	3.04	3.70	3.09	43.58

HARDWICK, MASS. (M.D.W.S.C.)—Elevation, 540 feet
Record: January, 1942, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.99	2.14	7.33	1.00	2.54	4.33	4.14	1.96	3.73	3.43	5.57	5.19	45.35
1943	2.35	1.11	2.02	—	4.75	1.62	4.58	4.19	1.49	5.29	5.80	0.76	—
1944	1.37	1.91	4.09	4.69	1.45	8.25	2.44	1.84	6.43	—	—	2.75	—
1945	3.33	3.43	1.76	6.40	6.40	8.69	7.02	3.64	1.76	2.78	4.02	4.69	53.92
1946	2.88	3.06	1.97	2.93	6.61	4.14	3.81	4.95	3.96	1.12	1.24	3.57	40.24
1947	3.19	2.29	2.83	5.50	3.50	2.79	5.13	1.89	2.50	1.58	5.96	3.23	40.39
1948	3.06	2.19	3.40	3.72	6.32	7.02	6.08	2.34	1.98	1.11	6.64	2.86	46.72
1949	4.71	3.42	1.54	3.13	5.00	0.66	3.52	5.16	2.88	2.95	2.24	3.59	38.80
1950	4.81	3.87	2.64	4.22	3.77	4.20	3.39	3.59	1.70	1.88	6.09	3.75	43.91
Av. 6 yrs.	3.66	3.04	2.36	4.32	5.27	4.58	4.82	3.60	2.46	1.90	4.36	3.62	43.99

HAVERHILL, MASS. (City Hall)—Elevation, 125 feet
Record: January, 1900, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	2.94	3.51	6.90	2.02	2.32	2.88	5.39	1.35	1.94	2.42	5.50	5.51	42.68
1943	2.80	1.22	3.42	2.60	4.91	1.80	6.60	3.50	0.35	5.01	4.57	0.90	37.68
1944	2.67	2.67	3.80	3.39	0.96	4.45	2.54	0.75	7.91	1.64	5.97	3.20	39.95
1945	2.63	4.35	1.64	2.96	4.59	4.29	4.38	2.36	1.14	2.22	6.39	5.37	42.32
1950	4.77	3.58	4.41	2.01	1.11	1.65	2.97	3.49	2.52	4.17	5.30	3.64	39.62
Av. 47 yrs.	3.16	2.92	3.65	3.47	2.78	3.39	3.76	2.84	3.28	2.88	3.33	3.37	38.83

HAVERHILL, MASS. (Kenoza Lake)—Elevation, 119 feet
Record: January, 1895, to June, 1948

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	2.60	3.89	6.86	1.81	2.54	2.95	5.94	1.65	1.97	2.53	5.21	5.56	43.51
1943	2.95	1.32	2.99	2.43	5.59	1.82	6.15	2.76	0.34	5.02	4.35	0.91	36.63
1944	2.29	2.74	4.41	3.45	0.95	4.74	2.89	0.87	8.15	2.27	4.81	4.20	41.77
1945	2.92	4.35	1.64	2.96	4.59	4.29	4.38	2.36	1.14	2.22	6.39	5.37	42.61
1946	3.90	2.96	1.54	2.62	5.86	2.67	1.76	7.90	0.69	3.06	0.90	3.86	37.72
1947	2.68	1.36	3.73	3.76	4.20	3.55	4.38	1.83	3.18	0.32	5.43	2.37	36.79
1948	4.08	1.96	2.71	2.94	4.68	5.00	—	—	—	—	—	—	—
Av. 53 yrs.	3.20	3.01	3.71	3.42	2.96	3.48	3.77	3 06	3.42	3.05	3.34	3.35	39.77

HEATH, MASS.—Elevation, 1,450 feet
Record: October, 1919, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.12	2.79	7.15	1.84	5.21	2.28	7.40	1.63	6.08	4.94	5.62	5.73	53.79
1943	3.17	1.67	3.43	4.49	7.65	3.19	7.30	3.50	2.43	6.68	5.93	0.67	50.11
1944	1.73	2.25	4.90	4.59	1.53	7.25	4.42	1.86	5.59	1.77	4.52	4.31	44.72
1945	4.34	4.81	2.14	6.74	8.29	7.11	8.10	2.58	3.56	3.57	4.07	3.84	59.15
1946	3.29	3.61	1.56	2.67	7.59	3.72	3.72	4.58	6.30	1.78	1.29	4.36	44.47
1947	4.00	2.87	5.01	4.85	4.83	4.78	3.75	5.52	3.82	1.57	5.34	3.18	49.52
1948	3.19	3.74	3.61	3.99	8.56	7.22	1.27	1.57	1.27	2.18	5.13	9.02	50.75
1949	5.01	3.32	1.60	4.96	3.24	1.22	3.80	4.23	4.43	2.65	1.93	2.80	39.19
1950	4.98	5.13	3.80	3.26	4.67	3.62	3.41	4.25	2.06	2.25	6.04	4.95	48.42
Av. 31 yrs.	3.55	3.17	3.81	4.07	4.25	4.64	4.28	3.77	4.44	3.28	4.42	3.55	47.23

HINGHAM, MASS. (Fulling Mill Station)*—Elevation, 150 feet
Record: January, 1917, to December, 1932 — January, 1934, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.56	2.95	8.01	1.61	2.00	2.73	5.06	2.82	2.78	3.36	5.62	4.43	44.93
1943	3.98	1.48	2.39	3.65	5.65	2.12	3.41	1.26	1.92	4.78	3.51	1.10	35.25
1944	2.34	2.01	4.28	3.16	0.37	3.78	1.22	0.75	7.98	3.55	7.41	3.59	40.44
1945	4.57	4.21	2.52	2.41	4.78	5.24	1.70	4.73	2.04	3.99	10.10	8.96	52.25
1946	3.92	3.51	1.68	2.87	5.03	3.85	0.87	10.44	2.37	0.27	1.06	4.32	40.19
1947	2.85	1.41	3.60	4.81	4.38	5.10	5.17	1.97	6.33	3.08	5.65	5.14	49.49
1948	7.38	2.50	3.55	3.37	7.01	4.25	6.93	2.71	1.10	6.67	6.21	1.66	53.34
1949	3.80	3.85	2.12	4.33	4.27	0.36	3.12	2.17	3.41	1.59	3.68	2.14	34.84
1950	3.80	4.37	3.50	3.33	1.46	1.99	1.64	7.27	1.90	1.89	7.40	3.89	42.44
Av. 33 yrs.	3.84	3.25	3.68	3.77	3.32	3.64	3.36	3.98	3.63	3.32	4.11	3.74	43.64

*Formerly vicinity Accord Pond.

HOLDEN, MASS. (Kendall Reservoir)—Elevation, 1,100 feet
Record: December, 1912, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	4.23	2.11	6.42	1.16	3.73	4.35	4.96	2.54	2.53	4.07	5.23	5.55	46.88
1943	2.62	1.65	3.17	3.66	5.67	2.37	4.45	1.10	0.75	5.56	5.34	0.73	37.07
1944	1.40	2.12	4.08	4.16	1.26	6.75	0.92	0.96	6.92	2.15	4.75	3.46	38.93
1945	2.82	3.85	2.23	4.81	5.28	7.30	5.00	3.72	2.42	2.22	5.19	5.13	49.97
1946	3.34	2.70	1.37	2.23	6.20	3.16	4.60	6.76	6.71	1.12	1.63	3.23	43.05
1947	3.33	2.23	2.87	5.23	3.02	2.84	4.43	1.28	2.72	1.27	5.89	2.38	37.49
1948	3.03	1.83	3.39	2.60	7.31	6.91	6.21	2.03	1.03	3.23	6.90	2.66	47.13
1949	3.61	2.75	1.35	4.04	3.63	0.60	2.13	3.59	2.32	2.11	2.43	3.15	31.71
1950	4.18	3.35	3.59	3.77	3.06	2.82	3.28	4.02	1.57	2.57	6.07	4.21	42.49
Av. 38 yrs.	3.49	3.11	3.75	3.71	3.70	4.14	3.97	3.76	4.14	3.34	4.18	3.44	44.73

HOLDEN, MASS. (Jefferson Station)—Elevation, 820 feet
Record: January, 1897, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	4.98	3.22	8.52	1.70	4.63	5.02	5.19	2.14	2.68	3.43	5.54	6.81	53.86
1943	4.41	2.17	4.11	4.36	6.19	2.07	4.03	2.06	0.83	5.84	5.57	0.76	42.40
1944	2.29	2.74	4.41	3.45	0.95	4.74	2.89	0.87	8.15	2.27	4.81	4.20	41.77
1945	5.20	4.32	2.27	4.66	5.48	5.75	5.77	3.35	2.84	2.36	5.50	6.56	54.06
1946	3.94	3.84	1.76	2.63	6.16	3.09	4.53	7.18	4.45	1.19	1.79	3.27	43.83
1947	3.77	2.96	4.00	5.40	3.72	3.32	4.29	1.95	3.82	1.30	5.93	3.17	43.63
1948	4.02	2.93	3.94	2.45	7.42	6.76	6.57	1.93	0.96	3.23	7.31	2.84	50.36
1949	4.31	3.64	1.67	4.96	3.78	0.62	2.65	3.95	2.35	2.26	2.57	3.51	36.27
1950	3.86	4.21	4.04	3.67	2.57	3.01	3.24	4.65	2.16	2.90	6.76	3.84	44.91
Av. 54 yrs.	4.13	3.92	4.32	4.00	3.60	4.04	4.12	4.06	4.02	3.28	4.07	4.04	47.60

HOLDEN, MASS. (Vicinity Holden Reservoirs)—Elevation, 750 feet
Record: January, 1885, to February, 1887—May, 1887, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	4.36	1.83	7.31	1.06	3.33	3.97	5.01	2.87	2.90	3.81	5.30	4.04	45.79
1943	3.09	1.64	3.55	3.99	5.20	3.53	5.15	1.80	0.73	5.36	5.26	0.82	40.12
1944	1.40	2.34	4.38	4.28	1.00	7.04	0.55	1.19	5.54	1.87	5.11	3.79	38.49
1945	2.93	3.73	2.26	4.61	5.85	7.81	4.31	3.86	1.72	1.91	5.57	5.28	49.84
1946	3.48	3.38	1.59	2.31	6.10	3.14	3.80	6.49	4.49	0.82	1.59	3.57	40.76
1947	3.28	2.30	3.26	5.28	3.02	2.84	4.43	1.28	2.72	1.27	5.89	2.38	37.95
1948	3.60	2.36	3.90	3.52	6.85	6.24	5.32	1.97	1.88	2.99	6.46	2.78	47.87
1949	4.19	3.19	1.50	4.37	3.92	0.73	1.36	3.15	2.31	1.93	2.85	3.13	32.63
1950	4.37	4.09	3.85	3.99	3.37	2.78	2.85	4.08	2.18	2.45	6.37	4.06	44.44
Av. 65 yrs.	3.71	3.41	4.01	3.70	3.67	3.74	4.01	3.79	3.96	3.47	4.09	3.62	45.18

HOLYOKE, MASS. (Whiting St. Reservoir)—Elevation, 370 feet
Record: January, 1907, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.99	1.85	6.94	1.02	4.46	3.69	4.74	1.66	4.92	4.45	5.92	6.88	50.52
1943	4.05	3.25	4.06	3.57	6.35	3.07	7.22	1.78	2.28	5.87	5.32	0.51	47.33
1944	1.77	2.34	4.91	4.34	0.81	4.72	2.93	2.23	4.89	2.01	4.70	3.27	38.92
1945	3.41	4.29	1.93	5.83	7.04	6.77	6.26	3.84	2.92	2.30	4.08	5.19	53.86
1946	3.05	3.92	1.54	2.34	7.11	2.65	6.60	4.46	4.67	1.50	0.71	3.33	41.88
1947	3.48	2.95	2.59	4.90	5.18	3.31	4.57	2.67	4.30	2.57	6.20	2.75	45.47
1948	3.09	2.45	3.09	2.97	5.20	5.10	3.20	3.74	1.53	1.11	5.38	3.81	40.67
1949	5.27	3.33	1.67	3.38	4.70	0.42	4.88	4.65	3.29	3.13	2.11	2.40	39.23
1950	4.03	4.57	3.28	3.49	4.30	4.64	2.06	3.37	1.82	1.91	5.13	4.68	43.28
Av. 44 yrs.	3.56	3.26	3.51	3.76	3.98	4.08	3.98	4.01	3.85	3.14	3.82	3.42	44.37

HOLYOKE, MASS. (High Service Reservoir)—Elevation, 450 feet
Record: January, 1907, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.90	1.88	6.60	1.07	4.71	4.12	5.54	2.20	5.80	4.38	5.54	6.86	52.60
1943	3.67	2.75	4.16	3.60	6.00	3.31	5.67	0.86	1.92	5.53	5.51	0.69	43.67
1944	1.73	2.94	5.34	4.69	1.04	4.72	2.23	2.26	6.64	2.08	4.67	3.43	41.77
1945	2.66	4.94	2.32	5.68	7.46	6.52	6.30	3.77	3.09	2.43	4.40	4.48	54.05
1946	2.86	4.17	1.89	2.20	7.47	3.67	6.56	4.18	4.31	1.49	0.93	2.47	42.20
1947	3.17	1.13	2.78	4.97	5.58	3.27	3.79	2.83	4.03	2.96	6.21	2.49	43.01
1948	2.61	2.50	3.20	3.34	5.45	6.77	3.45	4.29	1.42	1.17	4.85	4.66	43.71
1949	4.89	2.94	1.41	3.60	5.07	0.12	3.26	5.90	3.48	2.44	1.97	2.62	37.70
1950	4.62	3.85	4.32	3.67	5.70	3.36	3.47	4.10	1.33	1.20	5.66	3.62	44.90
Av. 44 yrs.	3.27	3.06	3.38	3.66	4.00	4.14	3.98	3.95	3.60	3.14	3.69	3.15	43.02

HOLYOKE, MASS. (Ashley Pond)—Elevation, 330 feet
Record: January, 1907, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.61	1.78	5.92	1.08	4.61	4.33	5.58	2.26	5.42	4.61	4.78	6.45	50.43
1943	3.47	3.23	3.62	3.55	6.42	3.35	6.38	0.83	1.85	5.87	5.22	0.57	44.36
1944	1.76	2.05	4.52	4.80	1.13	4.71	2.07	2.57	7.82	2.16	4.10	3.03	40.72
1945	3.09	4.11	2.77	6.56	7.69	6.67	6.42	3.64	3.51	2.49	4.11	4.32	55.38
1946	2.79	3.29	1.73	2.18	7.33	3.50	6.75	3.66	4.82	1.39	0.84	2.40	40.68
1947	2.89	2.54	2.92	3.59	4.21	2.92	3.60	2.95	4.86	3.02	6.87	2.64	43.01
1948	2.47	2.32	3.37	2.73	5.35	6.97	3.96	5.63	1.33	1.26	5.67	4.42	45.48
1949	4.85	3.24	1.58	3.78	4.86	0.48	3.16	7.96	2.91	2.63	2.11	2.59	40.15
1950	4.57	4.27	2.54	3.99	4.43	4.97	2.69	3.68	1.53	1.65	5.39	5.28	45.19
Av. 44 yrs.	3.33	3.10	3.33	3.58	3.85	4.22	4.06	4.19	3.83	3.26	3.77	3.24	43.76

HOLYOKE, MASS. (Holyoke Water Power Co.)—Elevation, 90 feet
Record: July, 1897, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	2.75	3.10	6.59	0.88	4.26	4.60	4.95	2.24	4.39	3.38	5.87	6.39	49.40
1943	3.61	1.69	3.88	2.80	6.00	3.33	5.14	1.52	1.17	5.29	4.95	0.58	39.96
1944	1.55	2.23	4.69	4.45	1.18	5.08	2.13	3.04	6.25	1.99	4.05	3.41	40.05
1945	3.67	3.64	2.14	5.54	6.88	6.53	5.45	3.33	2.82	2.29	4.07	5.15	51.51
1946	3.03	3.24	1.85	1.82	6.44	3.53	5.75	3.68	3.45	1.71	0.63	3.16	38.29
1947	3.10	2.77	2.64	4.10	5.01	3.07	4.08	2.10	3.27	2.75	6.43	2.90	42.22
1948	3.07	2.20	3.19	3.03	5.15	5.94	4.50	4.57	0.89	1.62	5.48	2.82	42.46
1949	4.95	2.76	3.07	3.48	4.34	0.55	3.22	3.59	4.09	2.45	1.92	3.17	37.59
1950	4.24	4.16	3.31	3.58	3.85	4.73	1.81	3.29	1.81	1.81	5.36	4.63	42.58
Av. 53 yrs.	3.60	3.36	3.84	3.70	3.78	3.92	3.91	3.94	3.63	3.19	3.48	3.53	43.88

HOPKINTON, MASS. (Met. W. W.)
Record: July, 1944, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1944							1.82	1.37	6.62	2.08	6.77	3.60	
1945	3.01	5.28	2.36	3.10	5.16	6.18	2.66	4.89	1.84	2.30	7.02	6.28	50.08
1946	3.68	3.39	1.69	2.50	5.01	2.86	1.86	8.69	3.76	0.57	1.31	4.29	39.61
1947	2.81	2.29	3.40	4.62	4.01	3.33	4.78	1.87	3.72	1.16	5.59	4.40	41.98
1948	4.00	2.07	3.18	3.02	5.51	4.56	4.65	1.40	0.89	3.03	6.23	1.93	40.47
1949	3.63	3.13	1.40	3.73	3.98	0.48	1.72	4.98	3.30	1.56	2.56	2.38	32.85
1950	4.42	4.22	3.59	3.20	1.58	1.87	2.87	6.35	1.46	2.57	5.99	3.80	41.92
Av. 6 yrs.	3.59	3.40	2.60	3.36	4.21	3.21	3.09	4.70	2.50	1.86	4.78	3.85	41.15

HOUSATONIC RIVER WATERSHED, MASS.
Record: January, 1913, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	2.98	1.68	6.13	1.64	4.22	3.69	6.55	2.61	5.80	4.62	5.55	4.88	50.35
1943	3.12	1.53	3.04	3.60	6.54	3.72	5.39	3.14	1.44	4.36	4.95	0.60	41.43
1944	1.57	2.05	4.01	3.93	1.98	5.77	5.86	2.34	5.13	2.32	4.33	3.02	42.31
1945	3.57	3.31	2.18	6.32	6.51	7.08	10.05	3.92	3.42	2.86	4.88	3.38	57.48
1946	2.33	3.34	1.22	2.23	6.48	4.12	5.00	2.99	5.91	2.43	1.21	3.03	40.29
1947	3.72	2.57	4.10	4.55	4.33	3.76	4.20	2.50	3.31	2.90	4.77	2.63	43.34
1948	2.48	2.43	4.23	3.46	7.01	8.38	2.84	2.73	1.62	1.87	4.59	10.89	52.53
1949	4.60	3.24	1.76	3.62	4.22	2.62	5.15	3.39	4.01	2.52	1.78	3.28	40.15
1950	4.35	3.54	2.51	2.89	3.48	4.30	4.18	3.43	1.74	1.79	7.27	3.44	42.92
Av. 38 yrs.	3.12	2.74	3.37	3.49	3.76	4.18	4.59	4.00	3.98	3.07	3.78	3.15	43.23

HUBBARDSTON, MASS.—Elevation, 1,030 feet
Record: August, 1919, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.04	1.73	6.64	1.01	3.30	4.52	6.36	1.45	2.75	3.52	4.35	3.30	41.97
1943	2.59	1.36	2.46	3.54	4.77	1.80	4.62	3.58	1.20	5.01	5.59	0.76	37.28
1944	1.16	1.85	4.03	3.63	1.44	11.82	2.46	1.12	7.43	1.58	2.73	3.01	42.26
1945	2.29	3.93	1.44	4.69	4.86	6.18	6.18	3.76	1.41	2.73	3.43	3.45	44.35
1946	2.23	3.11	1.75	1.98	5.18	4.11	3.66	4.35	6.37	1.02	1.36	2.33	37.45
1947	2.77	1.96	3.16	4.25	2.89	2.94	5.94	2.14	2.25	1.07	5.57	2.13	37.07
1948	2.81	1.97	2.94	2.74	6.33	5.52	4.72	1.37	1.41	1.84	6.44	2.61	40.70
1949	4.26	2.93	1.25	3.25	4.49	0.46	2.18	3.51	2.87	2.54	1.79	2.83	32.36
1950	3.95	2.37	2.12	3.32	2.48	3.61	2.95	3.14	1.46	2.54	6.71	1.97	36.62
Av. 31 yrs.	2.99	2.51	3.42	3.64	3.56	4.42	4.28	3.35	4.27	3.05	3.95	2.90	42.34

HUBBARDSTON, MASS. (Williamsville)—Elevation, 830 feet
Record: November, 1923, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.71	2.06	6.72	0.94	3.25	5.63	6.43	1.95	3.11	3.90	4.67	4.80	47.17
1943	3.28	1.68	2.89	3.59	5.65	2.24	4.63	3.70	1.12	5.28	6.38	0.61	41.05
1944	1.11	2.30	4.51	4.15	1.45	9.08	2.59	0.79	7.48	1.74	3.43	3.16	41.79
1945	3.26	4.40	1.72	5.38	5.87	6.62	6.79	4.64	1.24	2.51	3.57	4.27	50.27
1946	2.88	3.53	2.17	2.39	6.01	5.35	4.71	4.56	7.98	1.00	1.13	3.49	45.20
1947	3.00	2.46	3.11	4.54	3.31	3.05	6.78	2.30	2.19	0.95	5.43	2.90	40.02
1948	3.06	2.07	3.57	3.49	6.78	6.24	3.49	1.27	1.76	1.57	6.79	2.86	42.95
1949	4.79	3.43	1.16	3.09	4.74	0.70	2.35	3.26	2.60	2.47	1.94	2.85	33.38
1950	4.26	3.29	2.41	3.08	3.31	3.76	2.98	3.03	1.70	1.59	6.75	3.47	39.63
Av. 27 yrs.	3.43	2.82	3.44	3.63	3.82	4.23	4.24	3.44	4.33	2.96	3.89	3.10	43.33

HUNTINGTON, MASS. (Knightville)—Elevation, 500 feet
Record: October, 1919, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.58	2.29	6.45	1.31	4.96	3.62	5.42	2.25	5.68	4.79	6.36	5.87	52.58
1943	3.18	1.42	3.49	2.85	6.91	2.98	7.32	2.32	2.43	6.87	5.65	0.45	45.87
1944	1.31	1.39	3.32	4.35	1.50	5.95	3.80	1.14	6.21	2.08	5.53	3.78	40.36
1945	3.70	3.87	2.01	5.48	7.86	6.60	7.78	3.25	5.31	2.58	4.06	4.27	56.77
1946	2.68	3.13	0.99	1.99	6.66	2.80	4.67	2.28	5.48	1.51	0.93	3.31	36.43
1947	3.28	2.42	3.25	4.52	4.54	3.46	4.18	3.49	2.99	3.89	6.26	2.58	44.86
1948	2.60	2.44	2.72	2.85	5.55	8.13	1.99	3.68	2.24	1.73	4.64	10.36	48.93
1949	5.00	3.55	1.19	4.48	4.60	0.72	3.90	3.76	3.55	2.51	1.77	2.38	37.41
1950	4.80	3.51	3.18	3.44	4.57	2.74	2.59	3.20	1.46	2.49	7.22	5.13	44.33
Av. 31 yrs.	3.33	2.75	3.54	3.77	4.03	4.36	4.08	3.72	4.30	3.23	4.33	3.45	44.89

HUNTINGTON, MASS. (Knightville Dam)—Elevation, 620 feet
Record: July, 1940, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1940							1.74	1.57	1.93	1.19	6.02	2.61	
1941	2.94	2.76	2.18	0.82	2.04	4.29	4.89	2.45	2.07	2.12	3.83	4.23	34.62
1942	3.35	2.48	7.61	1.60	4.60	4.60	3.63	5.06	1.93	4.96	2.81	6.96	49.59
1943	3.55	1.70	3.68	3.67	5.40	2.36	7.33	2.27	2.27	6.32	4.70	0.65	43.90
1944	1.63	2.17	4.67	3.71	1.45	4.98	3.27	1.15	5.58	1.61	5.23	3.49	38.94
1945	3.35	3.46	1.96	4.89	6.73	5.48	7.27	2.71	4.65	2.17	3.21	3.92	49.80
1946	2.37	2.88	1.28	1.90	5.74	2.12	3.84	1.95	5.01	1.22	0.81	3.03	32.15
1947	3.38	1.88	3.80	4.47	3.71	2.68	3.37	3.29	2.76	3.47	5.84	2.63	41.28
1948	2.30	2.38	2.84	2.87	5.25	6.23	1.86	3.47	1.42	1.90	3.65	6.21	40.38
1949	3.75	2.52	2.65	3.78	4.04	0.57	3.30	3.47	2.57	2.05	1.23	2.25	32.18
1950	*4.80	*3.50	3.01	2.90	4.55	2.52	1.82	2.75	1.38	2.25	7.18	4.86	41.52
Av. 10 yrs.	3.14	2.57	3.37	3.06	4.35	3.58	4.06	2.86	2.96	2.81	3.85	3.82	40.43

*Estimated.

IPSWICH RIVER WATERSHED, MASS.
Record: January, 1911, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.88	3.65	6.71	1.65	2.62	3.46	5.32	2.09	1.92	3.25	4.70	5.06	44.31
1943	3.22	1.16	3.29	2.74	4.99	1.73	4.99	1.78	0.91	5.04	4.11	0.90	34.86
1944	2.92	2.27	3.77	3.34	0.76	5.10	2.77	2.09	6.48	2.13	6.07	3.62	41.32
1945	2.95	4.20	1.87	2.87	4.45	6.66	3.77	2.99	1.41	2.37	7.57	6.08	47.19
1946	4.07	2.98	1.47	2.84	5.11	3.19	1.43	8.58	2.12	1.11	1.08	4.04	38.02
1947	2.71	1.29	3.16	4.69	3.31	2.46	4.83	1.67	2.77	0.48	5.89	3.70	36.96
1948	4.90	2.20	2.61	2.77	5.04	5.67	4.03	1.15	0.57	3.28	5.49	1.47	39.18
1949	3.60	3.26	1.44	3.94	3.62	0.91	1.65	4.39	5.36	1.97	3.15	1.82	35.11
1950	4.48	3.06	3.45	1.95	1.55	1.28	2.07	4.06	1.24	2.94	6.25	3.79	36.12
Av. 40 yrs.	3.45	2.96	3.44	3.57	3.05	3.51	3.52	3.29	3.39	2.91	3.69	3.44	40.22

IPSWICH, MASS. (Willowdale)—Elevation, 30 feet
Record: May, 1911, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	4.39	4.14	7.36	1.87	2.46	4.39	6.53	2.18	2.32	3.02	5.05	5.00	48.71
1943	3.57	1.48	3.86	3.19	4.93	1.67	4.69	1.76	1.41	5.60	4.19	0.91	37.26
1944	3.02	2.49	4.08	3.63	1.13	5.20	3.26	1.16	6.56	2.09	6.30	3.96	42.88
1945	3.77	5.59	1.87	3.16	5.17	7.11	5.14	2.67	1.54	2.42	8.06	6.17	52.77
1946	4.38	3.23	1.42	3.20	5.74	2.97	1.69	9.44	2.23	0.84	1.04	4.58	40.76
1947	2.95	1.40	3.34	5.16	3.21	2.69	3.77	1.74	2.84	0.61	6.01	3.97	37.69
1948	5.67	2.77	2.87	3.09	5.01	6.27	4.54	0.89	0.71	2.98	5.54	1.42	41.76
1949	3.87	3.23	1.30	3.86	3.66	0.56	1.84	4.48	4.68	1.99	3.38	1.76	34.61
1950	4.59	3.12	3.02	1.52	1.61	1.22	2.20	4.15	1.37	2.05	7.13	4.04	36.02
Av. 39 yrs.	3.97	3.55	3.79	3.78	3.23	3.64	3.49	3.19	3.54	2.93	3.89	3.69	42.69

LAKEVILLE, MASS. (Assawompsett Pond)—Elevation, 60 feet
Record: January, 1894, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	4.24	3.00	7.97	1.30	1.81	3.03	3.42	5.48	2.30	4.29	5.87	4.08	46.79
1943	3.68	1.78	3.29	4.10	4.60	1.41	3.81	2.40	1.64	4.13	2.83	1.29	34.96
1944	2.34	1.94	4.86	4.12	0.44	3.14	1.27	0.90	6.89	2.04	8.45	3.69	40.08
1945	4.05	3.64	2.19	2.58	4.99	3.75	1.84	2.38	1.55	3.82	9.85	7.91	48.55
1946	3.19	2.29	1.52	2.95	4.94	4.11	1.40	13.70	3.04	0.75	1.13	3.25	42.27
1947	2.71	1.48	2.54	6.41	4.12	3.95	4.69	1.16	2.23	2.59	4.49	3.43	39.80
1948	5.77	1.64	3.43	4.10	9.45	3.37	3.98	1.75	1.48	5.94	5.31	1.59	47.81
1949	2.34	3.15	2.47	5.08	3.83	0.03	2.17	2.33	2.35	1.36	3.21	1.50	29.82
1950	4.19	4.37	3.64	3.22	2.81	3.43	1.04	4.38	2.43	1.50	7.03	3.67	41.71
Av. 57 yrs.	4.01	3.45	4.14	4.04	3.39	3.35	3.35	3.68	3.56	3.50	3.98	3.88	44.33

LAWRENCE, MASS. (Essex Co.)—Elevation, 51 feet
Record: January, 1856, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.48	2.99	6.64	2.02	2.90	2.77	6.01	1.31	1.77	2.74	5.08	4.55	42.26
1943	2.63	1.35	3.03	2.89	4.74	2.03	5.01	2.59	0.44	4.89	4.17	0.82	34.59
1944	2.34	2.49	4.00	3.47	0.70	5.81	1.46	1.47	7.27	1.83	4.78	2.96	38.58
1945	2.18	3.75	1.62	3.03	4.49	5.44	4.09	2.75	0.99	1.99	5.45	4.79	40.57
1946	3.06	2.94	1.60	2.75	5.04	2.86	1.66	7.46	3.00	0.78	0.82	3.35	35.32
1947	2.44	1.13	3.18	4.04	3.60	2.47	5.57	2.28	3.12	0.29	5.17	2.22	35.51
1948	3.56	2.13	2.35	2.63	4.22	5.59	3.32	1.34	0.03	2.51	5.57	1.57	34.82
1949	3.62	3.10	1.46	4.98	3.77	0.75	1.72	2.79	5.97	2.00	2.92	1.38	34.46
1950	4.04	2.13	3.68	2.40	1.25	1.10	2.51	*3.96	2.23	3.14	5.28	3.28	*35.00
Av. 95 yrs.	3.60	3.22	3.79	3.48	3.30	3.27	3.74	3.73	3.34	3.20	3.56	3.42	41.65

*Estimated.

LAWRENCE, MASS. (Experiment Station)—Elevation, 45 feet
Record: January, 1904, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.34	2.82	6.69	1.84	3.01	2.75	6.18	1.41	2.05	2.96	5.40	5.82	44.27
1943	2.92	1.10	3.17	3.05	4.96	2.07	5.39	2.73	0.57	5.21	5.17	0.91	37.25
1944	3.15	2.28	3.81	3.46	0.72	5.65	1.43	1.46	7.09	2.13	6.23	3.08	40.49
1945	2.51	4.18	2.41	3.08	4.73	4.94	4.77	2.96	1.05	2.27	6.59	5.53	45.02
1946	3.27	2.66	1.43	2.88	5.64	2.97	1.74	8.56	3.31	0.84	0.85	3.36	37.51
1947	2.34	1.05	3.32	4.53	3.41	2.68	5.48	2.15	3.13	0.34	5.34	2.69	36.46
1948	4.57	2.23	2.42	3.10	4.35	5.82	3.36	1.31	0.27	3.15	5.77	2.02	38.37
1949	3.48	3.13	0.96	4.92	3.74	0.69	1.54	4.65	4.22	1.95	2.75	1.70	33.73
1950	5.12	2.94	3.75	2.28	1.29	1.32	3.00	4.48	1.44	3.22	5.31	3.30	37.45
Av. 47 yrs.	3.34	2.93	3.40	3.68	3.88	3.55	3.82	3.24	3.52	2.82	3.66	3.38	40.22

LAWRENCE, MASS. (Arlington Mills) (Roof Gage)
Record: January, 1911, to March, 1949

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.27	3.01	7.04	2.06	2.79	2.24	5.07	1.05	1.78	2.46	4.64	5.42	40.83
1943	2.61	1.08	2.85	2.82	4.44	1.98	5.70	2.70	0.24	4.97	4.51	0.81	34.71
1944	2.86	2.50	3.95	3.35	0.66	5.58	1.38	1.23	7.81	0.79	5.12	1.85	37.08
1945	2.62	3.96	1.72	3.05	4.60	4.95	3.98	2.61	0.78	1.74	6.21	5.33	41.55
1946	3.46	2.85	1.54	2.79	5.25	2.47	0.81	7.86	2.77	0.77	0.71	3.54	34.82
1947	1.94	1.17	3.87	4.08	2.75	2.69	5.50	1.68	2.67	0.31	5.42	3.26	35.34
1948	5.19	2.61	2.68	2.55	3.95	4.38	2.74	1.25	0.03	2.68	4.53	1.49	34.08
1949	3.27	2.72	1.06	(DISCONTINUED)									
Av. 38 yrs.	3.03	2.76	3.69	3.63	3.10	3.52	3.85	3.24	3.27	2.86	3.65	3.16	39.76

LEICESTER, MASS. (Kettle Brook)—Elevation, 1,060 feet
Record: January, 1905, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.17	2.08	5.59	1.09	3.51	3.20	4.63	2.74	2.93	3.94	4.84	3.95	41.67
1943	2.82	1.09	2.63	1.64	5.54	3.78	5.29	1.54	0.55	5.71	5.15	0.32	36.06
1944	0.91	1.56	3.38	2.82	1.09	7.71	0.78	1.57	6.79	2.41	3.90	3.34	36.26
1945	2.83	3.60	2.43	4.71	6.31	8.15	4.92	4.53	1.86	2.44	6.17	5.02	52.97
1946	2.93	3.01	1.38	2.29	6.70	3.53	4.31	6.35	6.32	1.09	1.78	3.19	42.88
1947	3.16	2.24	3.22	4.98	2.92	3.43	5.55	1.47	3.46	1.73	5.87	2.75	40.78
1948	2.87	1.61	3.36	2.26	7.82	6.83	5.88	2.19	2.22	4.00	7.53	2.84	49.41
1949	3.59	2.75	1.37	3.97	4.57	0.82	1.82	3.97	2.24	2.04	2.52	3.10	32.76
1950	3.75	4.04	3.38	3.60	3.64	2.96	2.99	4.15	2.45	2.53	6.99	4.05	44.53
Av. 46 yrs.	3.48	3.24	3.74	3.58	3.71	3.98	3.98	3.80	4.22	3.34	4.02	3.43	44.52

LEICESTER, MASS. (Lynde Brook)—Elevation, 800 feet
Record: January, 1875, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	4.61	2.73	7.83	1.15	2.79	3.63	5.37	3.02	2.37	3.72	5.37	5.90	48.49
1943	3.08	1.26	4.08	3.79	5.85	2.25	5.31	1.85	0.59	5.35	5.05	0.86	39.32
1944	1.39	2.44	4.63	4.52	0.86	6.52	1.68	1.34	6.30	1.94	5.23	3.50	40.35
1945	3.00	3.88	2.33	4.92	5.96	7.26	2.70	4.06	1.44	2.05	5.07	5.14	47.81
1946	3.48	3.28	1.35	2.06	5.65	3.37	3.50	6.88	3.95	0.67	1.26	3.55	39.00
1947	3.16	1.94	3.39	5.40	3.29	3.84	5.14	1.66	2.92	1.58	6.22	2.17	40.71
1948	3.76	2.29	3.36	3.68	7.05	6.81	7.40	2.02	0.99	2.98	6.68	2.69	49.71
1949	4.14	2.97	1.39	4.38	4.22	0.88	2.15	3.40	2.00	1.71	3.06	2.87	33.17
1950	4.53	3.88	3.59	4.01	3.59	2.34	3.06	5.13	2.13	2.58	6.43	3.88	45.15
Av. 76 yrs.	3.58	3.28	4.06	3.53	3.47	3.46	4.04	3.94	3.59	3.37	3.82	3.47	43.61

LITTLETON, MASS.—Elevation, 325 feet
Record: January, 1918, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.58	2.73	7.49	1.33	3.45	5.33	5.40	1.57	2.20	2.73	4.72	5.65	46.13
1943	3.32	1.31	2.95	3.16	5.82	3.51	4.53	2.64	1.08	5.04	4.91	0.79	39.06
1944	2.11	2.27	4.36	3.68	1.07	7.35	2.34	3.08	6.42	2.43	5.30	3.11	43.52
1945	2.92	4.29	2.04	3.50	4.82	4.80	4.56	3.85	1.80	1.93	5.38	5.71	45.60
1946	3.54	3.12	1.66	2.53	6.16	4.05	2.98	6.51	5.62	0.96	0.79	2.54	40.46
1947	2.56	1.90	3.22	4.89	4.09	3.30	3.87	2.71	5.27	0.74	4.90	2.81	40.26
1948	3.53	2.21	2.68	2.71	5.52	5.12	4.10	2.50	0.57	2.09	6.28	1.78	39.09
1949	3.85	3.03	1.40	4.14	3.28	0.66	1.81	2.84	2.91	2.17	2.21	1.75	30.05
1950	4.38	3.42	3.54	2.13	1.48	1.80	1.48	4.15	2.02	3.70	5.81	3.74	37.65
Av. 33 yrs.	3.21	2.63	3.40	3.59	3.35	3.70	3.46	3.41	4.06	2.80	4.05	3.13	40.79

LOWELL, MASS. (Proprietors of Locks and Canals)—Elevation, 100 feet
Record: January, 1855, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.48	3.05	7.69	1.84	3.15	4.13	5.96	1.81	2.54	2.77	5.38	6.49	48.29
1943	4.09	1.57	3.78	3.33	5.23	2.83	6.12	2.26	1.11	5.00	4.64	0.85	40.81
1944	2.62	2.36	4.48	3.90	1.78	6.08	1.85	2.47	6.69	1.70	5.35	3.29	42.57
1945	3.38	4.73	1.78	2.75	5.68	5.11	3.95	3.14	1.58	2.48	7.77	6.33	48.68
1946	3.95	3.61	1.63	3.18	6.00	3.21	1.86	7.31	0.75	3.11	0.74	3.76	39.11
1947	2.77	1.82	3.99	4.02	4.82	3.31	6.14	2.13	3.14	0.58	5.03	3.09	40.84
1948	4.30	2.22	2.68	2.69	4.69	5.58	4.60	3.06	0.33	2.50	5.83	1.46	39.44
1949	4.02	3.17	1.61	4.03	3.49	0.64	1.69	2.63	5.38	1.99	2.58	1.72	32.95
1950	4.48	3.05	4.08	2.62	1.47	1.43	1.18	3.31	1.73	2.78	5.59	3.63	35.35
Av. 96 yrs.	3.82	3.61	4.02	3.71	3.40	3.42	3.65	3.93	3.44	3.28	3.79	3.66	43.73

LUDLOW, MASS. (Ludlow Reservoir)—Elevation, 410 feet
Record: June, 1875, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.55	1.56	6.89	1.08	3.77	3.93	5.63	2.29	4.81	3.57	5.76	5.13	47.97
1943	2.08	1.63	3.19	3.51	6.76	3.64	5.71	1.45	1.18	3.18	5.55	0.75	38.63
1944	1.24	2.21	3.53	4.59	1.23	6.95	1.66	4.03	7.16	2.20	4.51	2.54	41.85
1945	2.71	3.40	1.90	5.33	5.88	6.86	6.49	3.76	2.41	2.58	3.85	5.17	50.34
1946	1.95	2.26	1.87	2.40	5.04	3.73	3.86	4.39	2.65	0.80	1.10	2.53	32.58
1947	3.10	1.70	2.83	5.61	3.07	2.51	5.35	1.90	2.93	2.38	5.33	3.24	39.95
1948	2.54	1.86	2.95	3.35	4.54	6.83	5.12	2.74	1.36	0.65	6.78	2.43	41.15
1949	4.07	2.24	1.40	2.37	5.02	0.70	3.91	5.45	2.38	2.57	1.81	3.61	35.53
1950	4.08	3.11	2.65	3.92	3.49	4.16	2.87	4.22	1.52	2.04	5.89	3.43	41.38
Av. 75 yrs.	3.17	2.84	3.52	3.22	3.44	3.66	4.25	3.82	3.61	3.11	3.33	3.21	41.18

LYNN, MASS. (City Yard Service Building)—Elevation, 70 feet
Record: January, 1929, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.90	4.12	7.36	1.46	1.74	2.88	2.86	2.84	2.16	3.14	5.68	4.43	42.57
1943	2.88	0.89	3.88	2.65	4.69	1.73	3.66	1.93	1.75	4.55	2.80	1.00	32.41
1944	2.82	2.08	3.94	3.73	0.50	4.20	2.20	4.28	5.46	2.50	6.43	2.91	41.05
1945	3.70	4.36	1.98	2.15	4.62	5.35	3.08	3.16	1.11	2.22	7.64	6.87	46.24
1946	4.27	3.36	1.42	2.78	5.11	2.58	1.77	9.82	2.31	0.20	0.95	4.11	38.68
1947	2.58	1.12	2.47	4.38	3.82	2.55	3.64	1.53	4.27	0.81	5.99	4.76	37.92
1948	4.87	2.03	2.66	2.55	5.41	3.76	5.25	1.16	1.22	4.61	5.02	1.19	39.73
1949	3.44	3.43	0.96	2.93	2.83	0.59	2.14	4.30	5.05	1.84	3.69	1.91	33.11
1950	3.88	3.27	2.96	2.15	1.44	1.04	1.19	2.53	1.13	2.11	7.05	3.40	32.15
Av. 22 yrs.	3.81	2.94	3.74	3.49	2.98	3.25	3.03	3.52	3.30	2.90	3.97	3.41	40.34

LYNN, MASS. (Sewage Pumping Station)—Elevation, 18 feet
Record: January, 1932, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	4.35	4.42	8.22	1.75	1.95	2.87	3.44	2.84	2.26	2.97	5.59	4.24	44.90
1943	2.57	1.25	4.84	2.88	4.74	1.64	3.84	2.07	1.42	5.12	3.11	1.19	34.67
1944	2.56	1.85	3.11	4.25	0.60	4.55	2.14	3.69	6.16	2.48	6.97	2.87	41.23
1945	2.76	3.72	2.05	2.28	4.52	5.40	2.82	3.06	1.29	2.52	8.22	6.29	44.93
1946	3.71	2.90	1.56	3.08	4.85	2.73	1.76	8.15	1.92	0.31	0.85	3.30	35.12
1947	2.37	0.38	2.26	3.44	3.50	2.36	2.64	1.35	3.45	0.50	4.71	3.73	30.69
1948	3.27	1.30	2.03	1.85	4.48	3.40	4.08	1.29	0.75	4.05	4.47	0.80	31.77
1949	2.28	2.56	1.06	2.72	2.16	0.50	1.08	1.21	5.77	1.41	2.90	1.59	25.24
1950	3.35	1.48	2.76	1.71	1.52	1.40	1.20	2.60	1.35	2.27	7.69	3.10	30.43
Av. 19 yrs.	3.42	2.32	3.55	3.48	2.76	3.02	2.69	2.91	3.30	2.72	3.94	3.10	37.21

LYNN, MASS. (Water Works Pumping Station)—Elevation, 40 feet
Record: July, 1872, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.91	4.16	7.03	1.54	1.69	2.75	3.01	2.88	2.36	3.12	5.66	4.42	42.53
1943	3.37	1.24	4.72	2.77	4.94	2.29	3.46	2.16	1.72	4.83	3.17	1.04	35.71
1944	2.88	2.03	3.65	3.66	0.64	4.11	2.81	4.71	5.97	2.68	6.64	3.28	43.06
1945	3.75	4.74	1.97	2.41	4.65	5.11	3.51	3.05	1.28	2.21	8.87	6.81	48.36
1946	4.49	3.57	1.58	2.76	4.94	2.69	2.27	9.31	2.01	0.37	1.18	4.43	39.60
1947	2.78	1.31	2.94	4.59	4.08	2.40	4.04	1.93	3.30	0.78	5.99	4.80	38.94
1948	5.20	1.90	2.76	2.64	5.20	4.38	5.25	1.24	1.40	4.26	5.32	1.34	40.89
1949	3.59	3.74	1.32	3.37	3.31	0.67	2.07	4.30	5.06	1.97	3.91	2.26	35.57
1950	4.50	3.43	3.29	2.11	1.75	1.04	1.37	2.58	1.21	2.17	6.92	3.87	34.24
Av. 78 yrs.	3.67	3.32	3.74	3.48	3.17	3.20	3.37	3.69	3.24	3.24	3.66	3.38	41.16

MANCHESTER, MASS. (Water Works Pumping Station)—Elevation, 20 feet
Record: January, 1913, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.65	4.22	6.33	1.56	2.49	3.93	4.39	4.81	2.15	2.44	5.27	4.04	45.28
1943	3.66	1.21	3.38	2.84	5.21	1.54	3.23	1.39	2.13	5.24	4.03	1.23	35.09
1944	3.00	2.02	3.26	3.64	0.57	4.59	1.81	1.73	5.55	2.14	7.22	3.89	39.42
1945	3.64	4.35	1.91	2.65	4.14	5.84	3.67	3.50	1.43	2.89	8.67	10.03	52.72
1946	4.35	3.27	1.71	3.27	4.92	2.52	1.15	10.59	2.47	0.68	1.41	4.37	40.71
1947	2.70	1.13	2.74	4.14	3.80	2.89	4.68	1.71	3.01	0.52	5.85	4.12	37.29
1948	5.49	2.93	3.06	2.80	5.17	4.49	4.46	1.27	1.08	5.30	5.45	1.52	43.02
1949	4.71	3.82	2.33	2.67	3.05	0.45	2.22	3.81	5.50	1.91	4.35	1.32	36.14
1950	4.77	3.28	3.08	1.98	1.37	1.40	1.06	3.41	1.36	1.79	6.64	3.31	33.45
Av. 38 yrs.	3.71	3.16	3.46	3.80	3.21	3.44	3.31	3.39	3.49	3.07	3.86	3.53	41.43

MANSFIELD, MASS. (Water Works Pumping Station)—Elevation, 240 feet
Record: September, 1921, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	4.01	2.60	6.92	1.06	1.84	3.44	6.51	3.77	2.07	3.84	4.26	4.82	45.14
1943	4.13	1.05	2.53	4.01	4.85	2.78	4.02	2.54	1.59	4.16	3.67	0.51	35.84
1944	1.93	2.04	4.61	4.06	0.48	4.40	2.04	0.98	9.62	3.71	7.35	3.36	44.58
1945	3.23	4.84	2.34	2.74	5.11	7.06	5.02	3.21	3.17	2.90	9.64	7.15	56.41
1946	3.66	3.02	1.93	2.42	4.70	4.59	1.36	9.88	2.73	0.28	0.97	3.27	38.81
1947	2.79	1.34	2.77	4.52	4.38	4.64	4.20	1.68	7.01	1.67	5.96	4.26	45.22
1948	6.26	2.05	3.80	3.62	7.49	4.10	7.25	2.80	1.46	5.96	6.42	2.04	53.25
1949	3.37	3.39	1.58	4.17	4.20	0.12	0.93	2.06	2.44	1.64	4.09	2.07	30.06
1950	3.39	3.72	2.95	2.97	2.08	1.71	1.67	5.62	1.70	1.88	7.33	3.47	38.49
Av. 29 yrs.	3.79	2.98	3.74	3.61	3.17	3.71	3.40	3.64	3.65	3.14	3.84	3.46	42.13

MARLBOROUGH, MASS. (Water Works Pumping Station)—Elevation, 450 feet
Record: January, 1900, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.71	2.61	5.81	1.38	2.39	3.50	6.50	2.74	1.97	3.12	5.16	6.34	45.23
1943	2.36	0.98	3.49	3.55	4.74	3.94	4.19	1.57	0.79	5.58	4.30	0.99	36.48
1944	1.56	1.85	3.73	3.91	0.73	4.75	1.58	0.66	4.76	1.89	5.61	2.95	33.98
1945	2.36	2.97	2.25	3.16	5.33	6.90	3.44	3.57	1.40	1.89	5.65	5.32	44.24
1946	3.54	3.11	1.42	2.62	6.13	3.36	2.09	6.71	3.75	0.51	1.09	3.68	38.01
1947	2.88	1.80	2.90	4.66	2.97	3.35	5.62	1.41	2.80	1.06	4.37	3.11	36.93
1948	4.10	2.13	2.83	2.72	6.06	7.07	5.26	1.95	0.72	2.70	5.83	1.58	42.95
1949	3.06	2.46	1.57	3.66	3.64	0.75	1.53	4.05	2.79	1.69	2.35	2.28	29.83
1950	4.09	3.37	3.83	2.77	1.68	1.99	3.28	6.83	1.73	2.63	5.00	3.67	40.87
Av. 51 yrs.	3.13	2.94	3.37	3.50	3.18	3.70	3.49	3.44	3.65	2.80	3.53	3.33	40.06

MERRIMACK RIVER WATERSHED (Essex Company Records)
Record: January, 1880, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.27	2.72	6.75	1.86	2.52	4.85	5.41	1.88	2.99	2.86	5.07	5.45	45.93
1943	2.81	1.60	3.10	3.61	5.04	2.74	5.03	3.38	1.16	5.41	4.98	0.84	39.70
1944	1.79	2.55	4.24	3.80	1.35	6.80	2.49	1.38	6.60	2.40	4.37	3.19	40.96
1945	3.69	3.95	1.96	4.03	5.71	5.88	4.44	2.71	2.35	2.86	5.53	5.42	48.53
1946	3.37	3.04	1.55	2.75	5.44	2.93	3.13	7.16	4.26	1.67	1.52	3.93	40.75
1947	3.29	2.13	3.38	3.68	4.22	4.21	5.01	1.81	2.81	0.89	5.52	2.88	39.83
1948	3.54	2.12	3.01	3.03	6.11	4.76	4.11	2.11	0.65	2.53	6.41	2.48	40.86
1949	3.79	2.91	1.96	3.87	3.78	1.28	2.31	2.54	4.63	2.11	2.66	2.29	34.13
1950	4.42	3.25	3.60	3.11	1.90	2.76	2.17	4.46	2.10	2.74	6.12	3.67	40.30
Av. 71 yrs.	3.52	3.28	3.61	3.30	3.37	3.51	3.76	3.56	3.64	3.18	3.61	3.43	41.76

MIDDLEBOROUGH, MASS. (Water Works Pumping Station)—Elevation, 53 feet
Record: July, 1886, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	4.42	2.87	7.86	0.89	1.17	3.31	4.39	6.16	2.14	4.17	5.29	3.89	46.56
1943	3.84	1.75	2.94	3.53	4.91	1.74	4.14	3.69	1.58	3.51	2.59	1.37	35.59
1944	2.36	2.16	4.77	3.56	0.45	3.41	1.35	1.79	6.67	2.30	7.87	3.62	40.31
1945	4.02	4.45	2.24	2.33	4.82	3.65	2.00	2.42	1.87	3.56	10.27	3.72	50.35
1946	3.61	2.86	1.66	2.56	4.54	3.60	1.21	12.80	3.13	0.59	1.05	3.45	41.06
1947	2.87	1.47	2.92	5.88	4.57	4.27	4.31	1.23	1.90	2.63	4.14	3.82	40.01
1948	6.45	2.52	3.99	3.54	8.60	3.33	3.00	2.28	2.16	7.08	4.69	2.34	49.98
1949	3.96	4.55	2.41	4.12	3.57	0.07	2.19	1.62	2.50	1.32	3.46	2.43	32.20
1950	4.16	4.07	3.82	3.08	2.78	2.84	1.59	4.12	2.85	1.58	6.60	3.71	41.20
Av. 64 yrs.	4.05	3.61	4.07	3.76	3.20	3.11	3.24	3.60	3.47	3.59	3.81	3.71	43.22

MIDDLEFIELD, MASS.—Elevation, 1,650 feet
Record: July, 1920, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.11	1.81	8.29	1.63	4.49	4.30	6.60	2.03	4.68	5.18	5.44	5.47	53.03
1943	2.27	1.30	2.67	2.35	6.67	4.06	5.81	2.93	1.21	4.25	3.89	0.53	37.94
1944	1.51	1.66	3.90	3.56	1.28	5.30	4.33	1.58	3.92	1.72	3.94	2.62	35.32
1945	4.17	3.38	1.84	5.05	5.96	6.54	8.28	3.54	3.58	2.72	3.57	3.86	52.49
1946	2.30	3.26	1.27	2.48	6.26	3.28	5.53	2.26	5.54	2.12	1.37	3.43	39.10
1947	4.48	2.86	4.00	5.03	5.17	3.10	4.42	3.86	2.98	2.76	—	—	—
1948	—	—	—	3.24	6.66	8.62	2.87	3.26	1.54	1.53	4.51	11.43	—
1949	—	—	—	—	—	—	—	—	—	3.22	1.18	—	—
1950	4.59	2.80	1.86	2.31	5.19	3.71	4.08	4.67	1.93	2.85	9.49	5.34	48.82
Av. 27 yrs.	3.17	2.62	3.47	3.26	4.12	4.64	4.52	3.93	4.46	3.43	4.08	3.03	44.73

MIDDLETON, MASS. (Danvers Pumping Station)—Elevation, 97 feet
Record: November, 1925, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.28	4.12	6.76	1.80	2.80	3.45	4.61	1.84	2.00	2.91	4.21	5.15	42.93
1943	3.19	1.05	3.25	2.33	4.85	1.32	4.26	1.74	0.57	4.77	3.97	0.94	32.24
1944	3.07	2.30	3.64	3.33	0.54	5.05	2.71	1.84	5.97	2.34	5.79	4.21	40.79
1945	3.09	3.81	1.57	2.89	4.20	7.09	2.29	3.60	1.36	2.28	7.72	6.35	46.25
1946	4.05	2.82	1.38	2.60	4.50	3.01	0.90	9.49	0.84	2.75	0.86	3.99	37.19
1947	2.72	1.43	2.82	3.93	4.05	2.12	4.08	1.80	2.42	0.38	6.67	4.10	36.52
1948	4.28	1.87	2.41	2.37	5.07	4.67	4.40	0.87	0.21	3.97	5.24	0.96	36.32
1949	3.03	3.53	1.96	4.21	3.78	1.71	1.42	2.13	8.82	1.91	3.07	1.85	37.42
1950	4.24	2.87	3.63	1.84	1.52	1.10	1.33	4.33	1.17	3.46	5.04	4.05	34.58
Av. 25 yrs.	3.55	2.89	3.46	3.41	2.95	3.33	2.79	3.15	3.53	3.09	3.71	3.54	39.40

MILFORD, MASS. (Water Works Pumping Station)—Elevation, 275 feet
Record: January, 1915, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	4.68	2.91	7.77	0.99	2.40	3.53	5.91	2.70	1.90	3.50	4.76	6.90	47.95
1943	2.69	1.41	4.18	3.69	5.59	2.07	4.76	1.12	0.98	7.27	3.40	1.14	38.24
1944	1.69	2.08	4.40	4.35	0.76	4.01	1.55	1.78	8.51	2.27	6.47	3.36	41.23
1945	2.68	4.03	2.20	3.00	5.85	8.53	3.00	3.97	1.62	1.80	7.08	6.12	49.88
1946	3.72	3.28	1.54	2.67	5.03	3.70	1.30	9.43	3.30	0.47	1.23	4.00	39.67
1947	2.57	1.63	3.21	4.81	3.61	4.30	4.61	2.48	3.61	1.61	5.54	2.96	40.94
1948	4.66	1.80	3.20	2.48	5.53	4.32	6.02	2.52	0.75	2.97	6.36	1.81	42.42
1949	3.55	3.18	1.78	3.66	4.39	0.35	1.54	5.40	2.74	1.83	2.55	1.95	32.92
1950	4.15	4.02	3.37	3.66	2.27	2.36	3.91	4.98	1.91	2.76	6.48	3.69	43.56
Av. 36 yrs.	3.39	2.90	3.47	3.50	3.09	3.83	3.79	3.88	3.67	2.86	3.82	3.29	41.49

MILLBURY, MASS.—Elevation, 330 feet
Record: October, 1922, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	2.91	3.96	7.28	1.35	2.09	3.87	5.89	2.10	1.46	3.20	5.35	6.71	46.17
1943	3.67	1.43	4.33	2.86	5.60	1.72	4.44	1.00	0.34	5.84	4.34	1.04	36.61
1944	1.49	2.54	4.67	4.52	0.78	4.69	1.92	1.00	6.07	2.49	4.66	3.09	37.92
1945	3.58	3.62	2.43	3.23	5.35	6.34	2.79	3.30	1.56	1.53	5.99	5.97	45.69
1946	3.99	3.10	1.24	2.27	4.86	3.19	1.29	8.12	1.89	3.42	1.08	3.74	38.19
1947	2.93	2.58	2.80	4.30	3.02	3.40	4.62	1.15	3.15	1.29	4.30	3.32	36.86
1948	4.40	1.85	3.39	3.10	6.15	5.71	4.85	3.35	0.11	3.38	5.55	1.96	43.80
1949	3.47	3.24	2.46	3.51	3.16	0.20	1.13	1.40	3.35	1.46	2.27	2.66	28.31
1950	4.08	4.22	3.61	3.89	3.11	2.64	3.53	6.67	2.57	2.65	4.45	3.41	44.83
Av. 28 yrs.	3.65	2.99	3.64	3.54	3.04	3.87	3.33	3.59	3.48	3.11	3.87	3.56	41.67

MILLERS RIVER WATERSHED, MASS.
Record: January, 1916, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.41	1.81	6.48	1.22	3.03	5.01	5.40	1.88	3.51	3.55	4.81	4.66	44.77
1943	2.33	1.46	2.70	3.60	5.99	2.03	4.89	2.91	2.03	5.21	6.03	0.58	39.76
1944	1.39	2.00	4.20	3.55	1.20	8.40	4.34	0.82	6.45	1.96	3.33	2.67	40.31
1945	3.02	3.60	1.74	5.39	5.96	6.88	6.78	2.80	3.08	2.85	3.63	3.96	49.69
1946	2.67	3.25	1.61	2.56	6.09	4.89	4.38	5.11	4.53	1.21	1.01	3.13	40.44
1947	3.17	2.46	2.88	3.85	3.68	3.86	4.08	2.54	3.51	1.34	5.44	2.62	39.43
1948	2.78	2.24	3.24	3.38	6.65	5.87	3.58	1.93	1.44	1.53	6.24	2.64	41.52
1949	4.50	2.95	1.58	3.92	4.19	1.28	3.03	3.00	3.45	2.53	2.05	3.10	35.58
1950	4.83	3.21	2.50	3.37	2.84	4.61	2.70	4.45	1.38	2.19	7.14	3.75	42.97
Av. 35 yrs.	3.20	2.76	3.41	3.63	3.62	4.51	4.19	3.60	4.11	2.90	3.97	3.15	43.05

MILLIS, MASS. (Water Works Pumping Station)—Elevation, 130 feet
Record: November, 1920, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.57	2.60	7.01	1.09	2.21	2.76	6.18	2.35	2.01	3.82	4.57	5.86	44.03
1943	3.25	1.35	4.43	3.88	5.25	1.81	5.95	0.81	0.70	5.20	2.85	1.17	36.85
1944	1.72	2.32	4.27	3.98	0.59	5.18	2.27	3.57	7.70	2.90	6.37	3.02	43.89
1945	3.09	4.74	1.96	2.83	5.01	6.04	3.01	3.23	1.77	2.74	7.70	7.24	49.36
1946	3.93	3.38	1.79	2.39	5.29	3.62	1.28	9.55	2.79	0.64	1.11	3.87	39.64
1947	2.05	1.54	2.91	4.53	4.62	4.46	5.88	1.61	3.13	1.28	6.00	4.67	42.68
1948	5.83	1.84	2.86	2.75	5.47	4.17	6.57	1.49	1.23	3.91	5.96	1.85	43.93
1949	3.17	3.28	1.46	3.67	3.58	0.30	1.35	5.93	3.57	1.56	3.06	1.68	32.61
1950	3.00	3.81	2.74	3.19	2.06	2.23	3.68	3.22	2.60	2.28	6.03	3.39	38.23
Av. 30 yrs.	3.14	2.67	3.40	3.26	2.72	3.48	3.41	3.59	3.11	2.75	3.35	3.22	38.10

MILTON, MASS. (Blue Hill Observatory)—Elevation, 640 feet
Record: February, 1885, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.57	3.88	7.89	1.83	1.98	2.78	5.47	2.84	2.49	3.16	5.37	5.06	46.32
1943	4.42	1.65	3.63	3.07	4.91	1.98	2.92	1.48	1.33	5.56	3.10	1.12	35.17
1944	2.30	2.65	4.63	3.59	0.50	5.22	3.29	1.35	8.36	3.51	7.21	3.00	45.61
1945	3.82	5.14	2.51	2.56	5.08	6.58	3.03	3.88	1.83	2.57	9.29	8.16	54.45
1946	4.13	3.70	1.72	2.27	5.18	4.38	1.14	11.44	2.84	0.30	0.98	3.88	41.96
1947	2.91	1.58	2.71	4.36	5.27	5.00	4.10	1.97	4.76	1.91	5.07	5.30	44.94
1948	6.32	2.51	3.51	2.73	5.57	4.58	5.81	1.22	0.62	7.36	5.66	1.91	47.80
1949	3.62	2.73	2.83	4.15	3.58	0.71	1.26	1.51	5.25	2.03	3.82	2.18	33.67
1950	3.73	4.57	3.71	3.23	1.85	1.88	2.67	4.56	1.84	2.22	8.21	3.55	42.02
Av. 65 yrs.	4.09	3.79	4.11	3.83	3.54	3.62	3.81	4.01	3.94	3.69	3.99	3.90	46.32

MONSON, MASS.—Elevation, 370 feet
Record: January, 1885, to December, 1911 — January, 1926, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.60	1.81	6.83	1.14	3.91	4.08	6.74	3.20	3.27	4.14	6.21	5.36	50.29
1943	2.81	1.06	3.53	3.64	5.78	3.32	5.21	1.08	0.82	4.29	4.98	0.79	37.31
1944	1.26	1.63	3.54	4.15	0.71	7.01	2.04	1.91	7.63	2.02	4.80	2.82	39.52
1945	2.53	3.56	2.08	3.96	5.26	6.84	5.67	7.56	1.52	2.42	4.61	5.40	51.41
1946	3.26	2.89	1.58	2.39	3.70	3.29	3.60	6.49	2.56	0.79	1.51	2.88	34.94
1947	2.98	3.11	2.66	4.71	2.02	3.20	4.64	1.27	2.34	2.19	3.92	2.85	35.89
1948	3.08	1.57	3.59	3.19	4.86	9.05	5.34	2.42	0.93	1.71	6.18	3.84	45.76
1949	3.50	3.28	1.55	2.80	4.43	0.64	3.00	4.34	1.42	1.73	2.15	3.71	32.55
1950	5.07	3.07	2.86	3.36	3.76	3.95	3.27	4.21	1.47	1.87	6.00	3.96	42.85
Av. 52 yrs.	3.58	3.34	3.72	3.24	3.48	3.72	4.26	4.34	3.72	3.27	3.74	3.64	44.05

MONTAGUE, MASS. (Montague City—U.S.W.B.)—Elevation, 100 feet
Record: January, 1939, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1939	2.68	2.93	4.15	4.57	1.70	—	—	—	2.19	3.97	0.87	3.29	—
1940	2.72	3.29	4.81	5.06	3.82	5.80	4.88	1.67	1.66	1.37	5.72	3.81	44.61
1941	2.51	2.04	2.50	0.72	2.03	2.36	3.31	1.68	1.85	1.79	4.23	3.39	28.41
1942	2.70	3.01	6.54	1.45	4.77	3.31	4.52	6.69	5.34	2.87	6.03	5.98	53.21
1943	2.68	1.84	3.40	3.77	7.19	1.93	5.71	2.88	2.20	4.30	5.25	0.57	41.72
1944	1.07	2.25	5.26	3.79	1.55	5.71	5.60	1.49	6.38	1.44	2.85	3.38	41.27
1945	3.91	3.90	1.80	6.77	7.97	6.59	5.35	1.96	3.29	2.34	3.37	4.06	51.31
1946	—	—	—	—	—	3.81	3.96	4.31	4.79	2.20	0.70	3.68	—
1947	4.03	2.97	2.83	3.88	4.52	3.53	3.28	3.31	3.83	2.39	6.59	—	—
1948	3.30	2.72	2.78	2.75	7.66	5.98	3.30	2.08	0.05	2.87	5.63	—	—
1949	4.18	3.19	2.13	3.46	3.58	2.27	1.70	3.71	3.22	2.58	2.13	2.37	34.52
1950	5.00	3.80	3.31	3.72	4.36	3.52	2.70	3.63	1.17	1.96	5.85	4.94	43.96
Av. 8 yrs.	3.10	2.92	3.72	3.59	4.41	3.94	4.22	2.96	3.14	2.39	4.43	3.56	42.38

MONTAGUE, MASS. (Turners Falls Co.)—Elevation, 200 feet
Record: January, 1892, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.26	2.03	6.57	1.16	4.80	3.87	4.85	4.39	5.29	3.24	5.40	6.20	51.06
1943	2.51	1.69	3.32	4.21	6.52	1.68	4.68	2.55	2.60	4.51	6.03	0.40	40.70
1944	1.32	2.36	5.11	3.44	1.22	5.76	9.93	2.55	6.58	1.75	3.73	2.59	46.34
1945	3.91	3.89	2.61	6.04	7.77	6.73	5.19	3.36	3.29	2.53	3.52	4.41	53.25
1946	2.92	3.23	1.46	2.42	6.17	3.70	4.42	4.22	5.59	1.61	0.94	3.66	40.34
1947	4.14	2.96	3.36	4.24	4.08	3.69	3.56	2.76	3.50	2.40	5.90	2.83	43.42
1948	2.70	2.76	3.09	3.32	7.00	6.30	2.31	1.84	1.33	1.77	5.06	2.88	40.36
1949	4.87	3.45	1.75	3.49	3.56	1.50	2.45	4.16	2.96	2.67	2.17	2.72	35.75
1950	5.64	3.81	2.95	3.80	3.82	3.63	2.50	4.46	1.86	1.68	5.60	4.69	44.44
Av. 58 yrs.	3.28	2.76	3.49	3.23	3.62	3.59	3.83	3.71	3.75	2.81	3.50	3.21	40.78

MONTAGUE, MASS. (Lake Pleasant Pumping Station)—Elevation, 280 feet
Record: August, 1937, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	2.68	1.69	6.37	1.35	3.36	3.59	5.12	6.22	4.79	4.13	4.61	5.14	49.05
1943	2.58	1.53	3.20	3.67	6.58	2.20	3.88	2.76	1.93	3.89	5.70	0.51	38.43
1944	1.56	2.30	3.92	3.88	1.78	5.60	7.24	2.48	5.04	1.95	3.97	3.08	42.80
1945	3.65	4.25	2.33	5.74	7.60	6.60	6.01	2.17	3.89	2.43	3.54	4.50	52.71
1946	3.03	3.91	1.13	2.29	6.68	4.01	4.56	5.61	5.67	1.30	0.65	3.75	42.59
1947	4.31	2.79	2.85	3.40	3.77	3.89	3.15	3.65	4.29	2.74	5.35	2.98	43.17
1948	2.91	2.38	3.05	2.48	6.90	6.77	3.74	1.85	1.40	0.92	5.32	2.83	40.55
1949	4.59	3.61	1.41	3.01	3.51	2.52	1.65	3.64	2.37	2.79	2.24	2.53	33.87
1950	4.95	4.03	2.40	4.05	3.71	3.71	2.10	3.28	1.34	1.70	5.37	4.15	40.79
Av. 13 yrs.	3.22	2.78	3.01	3.39	4.32	4.42	4.36	3.23	3.77	2.35	3.86	3.16	41.87

MONTGOMERY, MASS.—Elevation, 980 feet
Record: January, 1929, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.76	2.68	7.06	1.27	5.76	4.98	5.02	2.89	6.62	5.46	5.96	6.93	58.39
1943	3.21	1.62	4.07	3.73	7.26	4.48	7.08	1.36	3.25	8.89	5.27	0.77	50.99
1944	1.75	2.27	5.30	4.53	0.95	5.13	2.25	3.57	7.99	2.82	5.97	4.20	46.73
1945	3.31	3.80	2.42	6.08	8.19	6.75	8.21	3.88	5.30	2.63	4.46	4.58	59.61
1946	2.52	3.28	1.52	2.78	8.17	3.10	4.98	3.48	5.95	1.74	0.88	3.52	41.92
1947	3.64	2.84	4.48	5.05	5.78	3.55	4.57	2.68	3.53	4.99	7.41	2.63	51.15
1948	2.94	2.59	3.55	2.98	5.86	7.04	2.91	3.53	3.22	2.25	4.53	8.94	50.34
1949	5.21	3.39	1.40	4.25	4.61	0.48	4.01	4.95	4.26	2.49	2.17	2.74	39.96
1950	4.51	4.54	3.76	3.46	4.92	4.44	2.06	4.12	1.63	2.85	7.81	5.58	49.68
Av. 22 yrs.	3.59	2.86	3.85	3.88	4.57	4.64	4.00	3.76	4.70	3.75	4.26	3.72	47.58

NANTUCKET, MASS.—Elevation, 43 feet
Record: March, 1847, to December, 1859 — January, 1887, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	4.24	2.74	7.42	0.90	2.11	1.63	2.18	7.12	2.46	3.70	3.40	4.56	42.46
1943	4.48	3.76	4.57	2.82	4.00	1.33	4.10	4.03	3.54	3.72	3.50	1.10	40.95
1944	3.58	2.38	6.46	4.23	1.26	2.62	1.04	0.57	2.67	2.39	8.76	3.39	39.35
1945	4.38	5.07	1.84	1.80	3.44	5.65	3.97	1.72	0.69	2.97	6.38	6.59	44.50
1946	3.06	3.78	2.17	4.65	6.79	2.89	3.66	12.92	4.16	0.37	1.06	3.85	49.36
1947	2.32	2.88	2.06	6.07	5.52	2.95	2.63	0.28	3.02	1.13	3.28	2.87	35.01
1948	7.15	3.79	4.08	2.72	8.24	3.39	1.28	3.12	3.62	7.22	4.72	2.46	51.79
1949	3.70	4.17	3.34	4.45	1.78	0.01	0.87	1.95	3.53	3.23	4.13	2.59	33.75
1950	3.18	3.25	4.20	2.69	0.86	2.20	3.25	2.99	5.74	1.26	6.23	5.27	41.12
Av. 76 yrs.	3.85	3.28	3.82	3.39	3.06	2.95	2.71	3.28	3.02	3.58	3.47	3.91	40.32

NATICK, MASS. (Lake Cochituate)—Elevation, 140 feet
Record: January, 1852, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	5.12	3.15	8.39	1.90	2.51	3.13	8.27	2.44	2.22	3.71	6.36	7.58	54.78
1943	3.58	1.46	4.15	4.36	4.99	2.79	4.93	1.36	1.40	6.33	4.31	1.41	41.07
1944	2.23	3.01	4.69	4.82	0.91	6.25	2.56	1.90	6.99	2.67	7.42	3.46	46.91
1945	3.39	5.35	2.91	3.40	5.62	7.11	3.26	3.76	1.47	2.84	8.64	8.17	55.93
1946	3.98	3.47	1.92	3.47	5.90	3.75	1.63	9.34	3.41	0.44	1.41	4.70	43.42
1947	3.46	1.96	4.81	5.34	4.58	4.01	5.79	1.17	4.22	1.41	7.32	4.39	48.46
1948	6.14	2.67	5.81	3.14	5.97	4.63	5.83	1.36	0.78	3.65	6.67	1.63	46.28
1949	3.00	3.67	2.60	3.99	4.08	1.09	1.97	1.20	7.05	1.51	2.48	2.26	34.90
1950	4.37	4.54	3.92	3.39	1.86	1.94	2.52	5.42	1.63	2.04	7.11	4.17	42.91
Av. 99 yrs.	3.88	3.70	4.16	3.86	3.49	3.46	3.82	4.08	3.65	3.59	4.10	3.71	45.50

NASHUA RIVER, MASS. (Wachusett Reservoir Watershed)
Record: January, 1897, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	4.46	2.94	7.91	1.55	3.84	5.55	5.80	2.20	2.52	3.39	5.41	6.00	51.57
1943	3.78	1.85	3.59	3.93	5.70	1.96	4.31	2.23	1.44	5.67	5.26	0.77	40.49
1944	1.62	2.64	4.65	4.24	1.25	7.46	1.13	0.95	6.79	2.17	4.64	4.07	41.61
1945	3.84	4.50	2.47	4.21	5.39	6.17	5.12	3.72	2.33	2.15	5.49	6.22	51.61
1946	3.86	4.26	1.76	2.77	6.33	3.23	4.36	6.54	5.52	1.03	1.47	4.12	45.25
1947	3.38	2.72	3.77	5.31	3.64	3.20	4.18	1.91	3.68	1.22	5.91	3.60	42.52
1948	4.25	2.98	3.87	3.05	7.39	6.06	5.84	1.89	0.81	3.11	7.15	2.86	49.26
1949	4.40	3.42	1.89	4.55	3.75	0.60	2.21	3.42	2.53	2.22	2.54	3.38	34.91
1950	4.94	4.21	3.84	3.72	2.54	2.61	2.89	4.03	1.68	3.05	6.07	4.18	43.75
Av. 54 yrs.	3.86	3.65	4.05	3.87	3.51	3.91	3.94	3.78	3.84	3.13	3.92	3.88	45.34

NEEDHAM, MASS.—Elevation, 115 feet
Record: January, 1937, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	4.18	3.00	7.05	1.34	2.12	2.37	5.43	2.44	2.10	3.42	5.30	5.23	43.98
1943	3.13	1.36	3.59	3.34	4.46	1.96	4.88	1.20	1.44	5.19	2.67	1.29	34.51
1944	1.82	2.37	4.66	4.36	0.52	4.91	2.03	3.02	6.97	3.25	6.70	2.94	43.55
1945	2.99	4.56	2.09	2.65	5.52	6.58	2.14	3.67	1.29	3.15	7.58	6.40	48.62
1946	3.96	3.40	1.91	2.56	4.83	3.36	1.23	9.30	2.33	0.49	1.18	3.88	38.43
1947	2.69	1.28	3.33	4.84	4.32	3.37	6.04	2.33	4.46	1.22	6.16	4.06	44.10
1948	5.93	2.09	3.50	2.53	5.23	4.67	4.69	1.24	1.19	3.48	5.67	1.75	41.97
1949	3.58	3.06	1.29	4.20	3.54	0.49	1.83	5.18	3.77	1.32	3.08	2.15	33.49
1950	4.24	4.01	3.50	3.13	1.92	2.25	1.84	3.44	1.55	1.83	6.10	3.65	37.46
Av. 14 yrs.	3.50	2.80	3.43	3.36	3.28	3.58	3.61	3.46	2.79	2.63	4.52	3.35	40.31

NEW BEDFORD, MASS. (Clifford)—Elevation, 100 feet
Record: January, 1814, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	4.77	3.75	8.08	0.95	1.40	2.13	2.58	6.74	2.67	5.39	5.76	4.12	48.34
1943	4.56	2.15	3.61	3.50	3.58	1.65	2.71	2.80	2.47	4.43	3.30	1.54	36.30
1944	2.94	2.50	4.82	4.55	0.84	4.01	0.59	2.39	5.22	2.23	9.30	3.30	42.69
1945	4.57	3.86	2.20	2.72	4.26	3.93	1.16	2.43	1.46	4.20	9.92	7.68	48.39
1946	4.06	2.75	1.66	2.35	5.32	3.28	1.70	12.51	2.79	0.71	1.20	3.73	42.06
1947	3.15	1.29	2.13	6.40	3.76	3.55	4.03	1.05	4.11	3.00	4.10	4.56	41.13
1948	6.52	2.87	4.39	4.61	10.26	2.81	3.11	1.39	2.72	6.72	5.17	2.71	53.28
1949	4.46	4.50	3.34	5.55	4.26	0.01	0.93	2.52	1.94	1.01	3.46	2.96	34.94
1950	4.45	4.91	4.22	3.45	3.54	3.37	0.95	3.22	1.63	1.02	7.36	4.35	42.47
Av. 137 yrs.	4.08	3.79	4.25	3.99	3.81	3.22	3.23	4.16	3.48	3.78	4.20	4.09	46.08

NEW BEDFORD, MASS. (City Hall)—Elevation, 100 feet
Record: January, 1903, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	2.81	4.01	6.96	0.91	1.47	2.06	2.61	7.59	2.91	4.78	6.05	3.84	46.00
1943	2.97	2.09	3.27	2.62	4.41	1.05	2.67	2.47	2.01	2.57	2.34	1.45	29.92
1944	3.28	1.77	4.20	4.39	0.79	2.12	0.62	1.25	4.11	2.09	8.94	2.65	36.21
1945	4.08	3.80	2.27	1.74	3.81	3.29	1.04	3.21	1.33	4.21	8.35	7.52	44.65
1946	4.45	3.06	1.63	2.95	5.03	2.79	0.79	12.97	2.87	0.69	0.84	4.18	42.25
1947	3.15	1.25	2.20	5.61	4.04	2.28	3.37	1.22	1.92	4.55	3.29	3.19	36.07
1948	6.57	3.52	3.91	3.97	9.80	2.53	2.69	1.01	1.98	6.71	4.36	2.68	49.73
1949	5.11	4.01	4.21	4.03	3.40	0.01	1.27	2.06	2.39	0.78	3.61	2.35	33.23
1950	3.73	4.12	4.25	3.11	3.04	1.73	1.09	1.86	1.72	0.97	5.94	3.93	35.49
Av. 45 yrs.	3.79	3.06	3.60	3.63	3.01	3.19	2.76	3.93	3.06	3.11	3.54	3.44	40.12

NEW BEDFORD, MASS. (Clark's Point)—Elevation, 10 feet
Record: December, 1930, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	4.47	2.88	7.57	0.70	1.77	2.36	2.73	7.39	2.72	4.40	5.60	4.25	46.84
1943	2.76	2.44	3.93	3.20	3.87	0.97	2.38	3.49	2.03	2.28	2.68	1.44	31.47
1944	3.69	2.86	4.89	5.43	1.10	2.76	0.64	1.61	3.86	2.06	9.24	3.66	41.80
1945	3.96	3.47	2.24	1.52	3.63	2.85	1.38	2.86	1.20	4.70	8.97	6.97	43.75
1946	4.02	3.48	1.70	3.09	5.16	2.92	1.13	11.28	2.06	0.31	0.90	4.05	40.10
1947	3.03	1.27	2.57	7.32	2.74	3.13	4.02	1.17	2.10	4.26	3.22	3.09	37.92
1948	5.62	2.72	3.76	4.74	8.76	2.79	2.91	1.00	2.79	5.64	4.13	2.33	47.19
1949	4.28	5.33	1.92	4.24	4.03	0.02	1.11	1.89	3.12	1.10	3.56	2.68	33.28
1950	3.39	4.28	3.58	3.59	3.70	1.60	1.08	2.35	1.51	1.04	6.26	4.27	36.65
Av. 20 yrs.	4.05	3.09	4.07	3.94	3.25	3.35	2.03	3.76	3.62	3.14	4.19	3.68	42.17

NEW BRAINTREE, MASS.—Elevation, 980 feet
Record: May, 1929, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.09	1.33	5.93	0.69	3.91	4.37	4.24	1.96	2.31	3.40	4.05	4.27	39.55
1943	1.96	1.08	2.89	3.24	6.08	2.15	5.00	2.30	1.07	5.29	4.48	0.59	36.13
1944	0.81	1.52	3.22	3.89	1.32	6.61	3.00	1.07	6.35	1.41	1.99	2.33	33.52
1945	1.91	2.37	1.24	3.63	4.47	7.22	5.70	3.41	1.96	2.77	3.43	3.89	42.00
1946	2.40	2.92	1.60	2.16	4.34	3.94	4.29	5.27	5.20	0.86	1.57	2.88	37.43
1947	2.75	2.10	2.02	4.47	2.73	2.56	5.02	0.89	2.29	1.16	5.37	2.44	33.80
1948	2.74	2.20	2.10	3.08	5.69	6.19	6.90	2.27	1.82	1.48	6.07	2.29	42.83
1949	3.72	2.47	1.34	2.92	4.46	0.74	2.54	3.60	1.96	2.57	2.03	3.32	31.67
1950	4.18	2.94	2.39	3.37	2.96	3.76	3.56	2.92	1.74	1.68	5.86	3.83	39.19
Av. 21 yrs.	2.76	2.11	3.01	2.86	3.37	3.97	3.94	3.35	4.03	2.44	3.15	2.68	37.67

NEWBURYPORT, MASS.—Elevation, 20 feet
Record: Plum Island, January, 1913, to September, 1931, inclusive
Water Works Pumping Station, October, 1931, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	4.01	3.80	6.97	1.53	2.61	2.92	7.82	1.61	1.53	2.81	4.72	5.74	46.07
1943	2.23	1.61	3.32	3.03	4.71	2.08	5.78	2.34	1.08	5.98	5.07	0.96	38.19
1944	2.94	2.12	4.00	3.39	1.13	4.93	3.20	1.16	10.70	2.92	6.09	3.56	46.14
1945	2.56	4.96	1.96	3.17	5.34	5.71	4.25	2.68	1.43	2.73	6.93	6.55	48.27
1946	4.12	2.80	1.49	2.86	6.52	2.37	1.53	10.31	2.36	0.60	1.07	4.29	40.32
1947	2.74	1.16	3.68	3.80	3.69	3.40	5.42	1.39	3.68	0.07	6.43	4.55	40.01
1948	5.36	2.23	2.38	3.10	5.03	5.00	3.69	1.36	0.50	2.07	5.83	1.84	38.39
1949	2.95	2.87	0.93	5.62	3.32	0.65	1.17	3.89	4.18	2.19	3.61	1.72	33.10
1950	4.43	2.83	3.49	1.95	1.41	1.76	3.80	4.28	1.46	4.98	6.05	3.57	40.01
Av. 38 yrs.	3.24	2.78	3.30	3.55	3.05	3.45	3.81	2.95	3.34	2.95	3.62	3.23	39.37

NEW SALEM, MASS. (South New Salem)—Elevation, 750 feet
Record: August, 1919, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1940	2.82	2.65	5.60	6.85	7.09	3.50	4.36	2.47	3.34	1.37	—	—	—
1941	—	—	—	—	—	5.17	—	—	1.12	2.94	3.39	4.06	—
1942	3.93	1.63	7.20	0.99	3.55	5.60	4.47	2.47	4.04	4.29	4.58	6.28	49.03
1943	2.57	1.73	3.08	3.88	5.60	1.85	3.59	4.81	1.53	5.32	5.49	0.54	39.99
1944	1.28	2.29	4.93	4.44	1.00	8.44	4.66	1.93	5.52	1.91	3.76	2.20	42.36
1945	2.29	3.30	1.86	6.32	6.48	10.24	7.01	2.98	2.95	2.83	3.86	4.45	54.57
1946	2.54	3.37	1.98	2.46	6.64	3.50	4.09	4.34	5.15	1.52	0.92	3.47	39.98
1947	3.47	1.83	2.59	4.16	3.72	3.90	3.21	1.30	4.35	1.39	5.60	2.13	37.55
1948	2.13	2.17	3.88	3.10	6.11	6.25	3.55	1.96	1.96	1.28	6.20	2.86	41.45
1949	4.61	3.39	1.48	3.32	5.72	0.98	3.01	2.79	3.06	2.46	1.87	3.62	36.31
1950	4.75	3.71	2.58	4.19	3.82	4.91	2.45	4.79	1.62	2.59	5.96	4.57	45.94
Av. 27 yrs.	3.34	2.66	3.50	3.71	5.04	4.94	4.04	3.97	4.29	3.04	4.17	3.33	44.95

NEW SALEM, MASS. (North New Salem)—Elevation, 590 feet
Record: November, 1941, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1941	—	—	—	—	—	—	—	—	—	—	3.04	3.63	—
1942	3.64	2.05	8.07	1.15	3.23	4.35	5.40	2.20	3.60	3.94	5.93	6.18	49.74
1943	2.62	1.70	3.25	3.77	5.94	2.63	4.84	2.98	1.96	6.04	5.70	0.69	42.12
1944	1.10	2.57	4.55	3.64	1.30	8.44	3.81	0.89	5.67	2.18	4.04	2.74	40.93
1945	3.29	3.70	2.09	5.84	6.90	8.32	8.33	3.16	3.35	3.24	4.83	3.90	56.95
1946	3.13	3.43	1.71	3.08	6.47	4.76	5.15	4.52	5.45	1.61	1.10	3.95	44.36
1947	4.04	2.46	3.97	4.65	4.75	4.58	3.92	6.59	4.10	1.41	6.88	2.76	50.11
1948	3.27	2.26	3.89	4.11	7.64	6.27	4.38	1.69	1.68	1.59	6.88	3.32	46.98
1949	5.63	3.80	1.70	3.48	5.41	1.57	3.15	2.95	4.03	3.11	2.42	3.96	41.21
1950	5.44	4.23	2.67	4.09	3.51	5.22	2.37	4.56	1.48	2.43	7.00	4.36	47.36
Av. 9 yrs.	3.57	2.91	3.54	3.76	5.02	5.13	4.59	3.28	3.48	2.84	4.98	3.54	46.64

NEWTON, MASS. (Water Works Pumping Station)—Elevation, 100 feet
Record: January, 1908, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	4.45	2.94	6.96	1.57	1.82	3.08	5.36	2.61	2.22	3.46	4.91	5.28	44.66
1943	3.48	1.26	3.76	3.11	5.01	2.56	4.70	1.08	1.74	4.61	3.01	1.24	35.56
1944	1.66	2.39	4.13	3.56	0.76	5.40	2.08	1.98	6.95	3.41	5.21	3.21	40.74
1945	3.40	4.64	2.28	2.69	5.25	7.99	2.44	3.17	1.54	2.99	8.47	6.46	51.32
1946	4.06	3.13	1.79	2.74	5.36	3.50	2.67	9.98	2.77	0.60	1.28	4.11	41.99
1947	2.70	1.33	3.53	5.06	4.61	3.32	5.07	2.43	4.18	1.45	6.79	3.98	44.45
1948	5.08	2.07	3.58	2.83	5.65	4.13	5.60	1.36	1.27	4.09	6.15	1.51	43.32
1949	3.41	3.24	1.34	5.10	3.88	1.04	1.82	4.73	3.92	1.72	3.69	2.01	35.90
1950	4.54	3.78	3.41	3.40	2.37	1.97	3.07	4.43	1.41	2.15	6.60	2.99	40.12
Av. 43 yrs.	3.69	3.21	3.64	3.75	3.09	3.54	3.53	3.66	3.38	2.93	3.64	3.44	41.50

NORTH ADAMS, MASS. (Notch Brook Reservoir)—Elevation, 1,200 feet
Record: January, 1900, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	2.36	1.38	7.12	2.10	3.75	2.14	6.59	1.29	5.26	4.39	5.75	5.67	47.80
1943	2.53	1.82	3.13	5.55	8.03	2.80	6.52	3.88	1.07	3.96	7.31	0.97	47.57
1944	1.75	2.53	4.93	4.55	1.84	4.57	6.00	1.43	6.01	2.36	3.87	2.24	42.08
1945	4.81	4.30	2.08	6.59	5.14	7.23	8.69	2.69	5.04	4.00	5.84	1.43	57.94
1946	3.32	3.90	1.98	3.48	7.86	3.75	3.24	3.52	6.62	2.75	1.68	3.44	45.54
1947	4.62	5.11	4.67	5.71	4.73	4.72	4.12	2.07	4.25	1.55	4.25	2.52	48.32
1948	2.55	3.22	3.40	5.22	7.17	6.12	2.47	1.71	2.21	1.09	6.09	3.53	49.78
1949	4.99	3.55	2.55	3.98	4.45	2.14	3.29	2.51	3.44	2.63	2.01	3.93	39.47
1950	6.12	5.14	3.65	3.52	4.73	2.62	4.09	4.36	3.36	1.64	7.34	3.34	49.91
Av. 51 yrs.	3.30	3.05	3.46	3.53	3.41	3.59	3.82	3.36	3.56	2.89	3.50	3.06	40.53

NORTH ADAMS, MASS. (Broad Brook Reservoir)—Elevation, 900 feet*
Record: January, 1900, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	1.73	2.03	4.87	2.05	3.72	1.79	6.60	1.28	4.50	3.00	5.23	5.69	42.49
1943	2.50	1.97	1.31	3.72	5.21	2.49	3.34	5.25	0.79	3.44	6.46	0.83	37.31
1944	1.54	2.35	3.68	2.94	1.41	4.01	3.91	2.57	6.34	2.95	3.01	3.10	37.81
1945	3.54	1.92	1.13	3.78	5.87	5.81	6.04	2.43	3.43	3.61	4.92	1.57	44.05
1946	2.15	3.08	1.94	1.50	5.52	3.74	1.78	2.83	4.56	1.96	1.83	1.97	32.86
1947	3.81	2.33	3.92	3.54	3.41	3.95	3.95	1.95	1.44	0.64	4.14	1.81	34.89
1948	1.91	1.31	4.09	2.82	6.38	4.45	3.82	2.06	1.17	1.48	4.92	7.88	42.29
1949	2.58	2.33	2.08	2.90	3.64	2.05	4.04	3.02	4.55	2.00	1.31	2.93	33.38
1950	4.24	2.98	2.31	3.05	3.05	3.45	3.98	2.77	3.51	1.21	6.67	2.84	40.06
Av. 51 yrs.	2.94	2.48	3.28	3.31	3.29	3.84	4.18	3.73	3.67	2.97	3.31	3.07	40.07

*Gage at Pownal, Vt.

NORTH ANDOVER, MASS.—Elevation, 100 feet
Record: May, 1911, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	4.16	2.67	7.20	1.85	3.18	2.23	6.07	1.57	1.38	3.09	5.66	5.34	44.40
1943	3.24	1.11	2.91	2.82	4.75	1.74	5.27	2.17	0.73	5.36	4.77	0.91	35.78
1944	3.46	2.28	3.94	3.18	0.91	5.36	3.34	1.78	7.66	2.56	7.03	3.95	45.45
1945	2.95	4.79	2.60	3.20	4.29	5.95	5.15	3.16	1.37	2.48	8.52	6.67	51.13
1946	4.10	3.04	1.51	3.01	5.60	3.77	1.63	8.44	2.46	0.58	1.01	3.92	39.07
1947	2.66	1.54	3.35	5.38	2.56	2.85	5.88	1.32	3.21	0.45	5.63	4.17	39.00
1948	6.02	2.24	2.86	2.98	4.89	7.28	3.47	1.27	0.30	3.19	5.85	2.00	42.35
1949	3.73	3.33	1.20	4.08	3.77	0.53	1.62	5.82	4.58	1.84	3.20	1.89	35.59
1950	4.90	3.50	4.01	2.31	1.29	0.76	1.95	3.66	1.51	3.71	5.32	3.57	36.49
Av. 39 yrs.	3.35	2.79	3.45	3.76	3.07	3.51	3.69	3.36	3.35	3.02	3.80	3.43	40.58

NORTHBRIDGE, MASS. (Whitinsville)—Elevation, 350 feet
Record: January, 1872, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	4.32	2.87	7.68	1.14	2.25	4.49	4.73	2.50	1.56	3.80	4.83	9.01	49.18
1943	3.59	1.52	4.58	3.57	5.24	2.10	5.32	0.98	0.96	5.13	4.08	1.16	38.23
1944	1.72	2.52	5.01	4.85	0.91	4.20	2.63	2.20	8.78	2.87	6.22	3.71	45.62
1945	3.27	4.90	2.45	3.07	5.97	5.94	3.97	3.90	1.58	2.41	7.68	6.94	52.08
1946	3.29	3.51	1.59	2.29	6.02	4.55	1.70	9.08	4.36	0.53	1.37	4.19	42.48
1947	2.85	2.14	3.69	4.79	3.53	4.28	5.46	1.70	2.81	1.63	4.86	3.68	41.42
1948	5.00	1.97	4.03	3.32	6.14	4.33	5.22	1.55	0.71	3.37	6.28	2.60	44.52
1949	3.87	3.40	1.95	3.78	4.21	0.36	2.61	5.32	2.98	1.66	2.73	2.47	35.34
1950	4.53	4.63	3.99	3.95	2.50	2.55	3.38	5.21	1.25	2.67	6.17	3.93	44.76
Av. 79 yrs.	3.87	3.61	4.17	3.65	3.38	3.43	3.76	4.18	3.46	3.52	3.96	3.71	44.70

NORTHFIELD, MASS. (Northfield Schools)—Elevation, 380 feet
Record: June, 1931, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.19	1.90	5.30	1.48	4.05	2.82	6.19	1.94	3.38	4.40	4.09	5.09	43.83
1943	2.62	1.90	3.26	3.94	5.81	2.30	4.41	3.62	3.22	4.44	5.31	0.55	41.38
1944	1.69	2.22	4.61	3.46	0.88	5.44	5.86	2.30	8.23	2.12	3.59	2.61	43.01
1945	3.86	3.52	2.11	6.07	6.84	6.17	5.54	3.45	2.22	3.08	3.40	4.33	50.59
1946	3.43	3.47	1.08	2.26	6.57	3.03	5.05	5.72	5.13	1.29	0.83	4.03	41.89
1947	3.89	2.61	3.31	4.21	3.87	3.77	4.25	1.51	3.52	2.17	5.08	2.97	41.16
1948	2.33	2.85	3.58	3.00	7.12	6.01	2.54	2.24	0.71	1.18	5.67	2.97	40.20
1949	3.82	3.18	1.67	4.17	3.27	1.43	3.53	2.97	3.04	2.57	1.96	2.15	33.76
1950	5.06	4.47	2.09	4.69	4.08	3.60	2.65	7.58	1.41	1.95	5.83	4.25	47.66
Av. 19 yrs.	3.64	2.76	3.47	3.64	3.76	3.84	3.99	3.43	4.26	2.71	3.78	3.27	42.55

NORWOOD, MASS. (Ellis Station)—Elevation, 90 feet
Record: January, 1913, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.58	2.94	7.16	1.43	2.18	2.35	6.43	2.59	2.34	3.36	4.19	5.21	43.76
1943	3.26	1.28	3.32	2.84	4.35	1.65	3.49	0.92	1.06	4.53	2.76	1.10	30.56
1944	1.96	2.29	4.41	3.68	0.39	4.42	3.51	2.79	7.53	2.56	5.34	2.72	41.60
1945	2.87	3.99	1.92	2.46	5.04	5.58	3.54	3.34	1.76	2.50	7.96	6.31	47.27
1946	3.51	3.34	1.66	2.13	4.86	3.72	1.23	10.71	3.16	0.28	1.11	3.67	38.84
1947	2.45	1.24	2.87	5.07	4.96	4.67	4.59	1.21	3.87	1.39	5.82	4.01	42.15
1948	5.21	1.86	3.12	2.66	5.66	5.29	5.76	1.29	1.21	5.08	5.66	1.40	44.20
1949	3.23	3.36	1.52	4.42	3.69	0.42	0.81	5.96	3.97	1.56	4.22	1.76	34.92
1950	3.59	3.91	3.10	2.76	1.64	1.71	3.02	3.82	1.54	1.66	6.64	3.39	36.78
Av. 38 yrs.	3.30	2.80	3.38	3.69	3.21	3.71	3.88	4.08	3.49	3.06	3.56	3.29	41.45

OTIS, MASS. (West Otis)—Elevation, 1,400 feet
Record: January, 1913, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.13	1.47	5.72	1.29	4.50	6.15	7.50	2.26	5.56	5.70	4.70	5.11	53.09
1943	3.50	1.54	3.01	3.01	5.85	3.03	4.92	2.66	2.25	4.78	2.22	0.72	37.49
1944	1.30	1.26	3.76	3.79	1.04	5.08	3.77	2.34	3.65	1.86	—	—	—
1945	—	—	—	6.28	7.58	6.25	9.08	3.49	4.15	2.83	4.40	3.70	—
1946	2.15	3.03	1.13	2.00	5.68	3.07	4.73	2.10	4.69	2.44	1.23	2.81	35.06
1947	3.56	2.77	4.57	4.92	4.08	4.27	4.96	2.92	2.31	2.56	5.13	2.70	44.75
1948	2.31	2.15	4.23	2.72	6.24	7.12	4.23	3.39	3.28	1.94	4.95	10.76	53.32
1949	4.32	3.79	1.39	3.30	3.94	2.61	3.77	3.52	3.31	2.43	1.64	3.81	37.83
1950	4.36	3.03	2.35	2.79	3.86	3.54	3.45	2.85	0.91	2.00	9.77	4.09	43.00
Av. 36 yrs.	3.11	2.78	3.47	3.45	3.86	4.37	4.50	4.34	3.91	3.31	3.79	3.15	44.04

PALMER, MASS. (Three Rivers)*
Record: April, 1921, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.65	1.58	6.29	1.12	3.79	3.79	5.90	2.66	4.02	3.61	5.75	5.51	47.67
1943	2.96	1.66	3.52	3.02	7.17	3.92	4.90	2.20	0.91	4.19	5.78	0.84	41.07
1944	1.19	2.13	3.92	3.54	1.03	6.25	1.25	2.55	7.16	2.34	3.85	2.96	38.17
1945	—	—	—	—	—	—	—	—	—	—	—	—	—
1946	—	—	—	—	—	—	—	—	2.66	0.82	1.43	2.55	—
1947	2.93	2.29	2.50	5.46	2.75	3.23	6.43	2.00	3.43	2.25	5.50	2.14	40.91
1948	2.66	2.07	3.65	3.59	5.16	6.83	5.60	3.20	1.07	1.03	5.81	2.68	43.35
1949	3.53	2.57	1.22	2.50	4.67	0.65	3.37	5.32	1.84	2.35	2.30	3.62	33.94
1950	4.57	3.51	2.40	3.68	3.44	4.73	3.37	5.31	1.30	1.64	4.55	3.85	42.35
Av. 27 yrs.	3.18	2.57	3.42	3.36	3.38	3.92	3.74	3.61	3.52	2.66	3.55	3.08	39.99

*Formerly Bondsville.

PEABODY, MASS. (Water Works Pumping Station)—Elevation, 75 feet
Record: January, 1903, to December, 1916 — June, 1933, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.84	4.26	6.64	1.54	1.77	2.53	3.01	3.83	2.18	3.56	5.04	4.47	42.67
1943	2.58	1.19	4.02	2.68	4.72	1.51	3.79	1.51	1.78	4.78	3.31	1.16	33.03
1944	2.66	2.21	4.11	4.01	0.47	4.31	1.57	2.65	6.48	2.29	6.81	3.49	41.36
1945	3.34	3.87	1.65	2.57	3.49	6.28	3.15	3.14	1.11	2.69	7.69	7.21	46.19
1946	4.54	3.55	1.58	2.96	5.61	2.48	1.23	9.75	2.14	0.64	1.23	4.57	40.28
1947	2.86	1.20	2.85	4.43	3.89	2.26	3.57	1.96	2.91	0.71	6.14	3.52	36.30
1948	6.49	2.36	2.67	2.65	5.02	4.43	3.49	1.40	1.35	4.50	5.85	1.45	41.66
1949	3.86	2.41	1.81	3.67	3.40	0.77	1.77	1.42	5.05	1.67	3.37	2.08	31.28
1950	3.87	3.51	2.96	1.77	1.62	1.11	1.25	3.27	2.08	2.64	7.08	3.86	35.02
Av. 30 yrs.	3.92	3.14	3.48	3.83	3.07	3.51	3.22	3.14	3.28	2.70	3.92	3.67	40.88

PELHAM, MASS. (West Pelham)—Elevation, 600 feet
Record: November, 1936, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.53	1.58	7.07	1.05	3.31	4.87	5.22	1.76	4.21	4.22	5.39	5.43	47.64
1943	3.35	1.51	3.55	3.46	7.21	2.03	6.77	3.62	2.18	4.36	6.50	0.60	45.15
1944	1.59	2.21	4.65	4.41	2.11	6.25	3.53	3.17	6.60	1.97	4.25	2.95	43.69
1945	3.13	3.88	1.90	5.99	7.80	10.46	6.61	2.89	2.58	2.50	3.91	4.56	56.21
1946	2.61	3.78	1.88	2.33	5.72	4.26	5.12	3.23	4.84	1.82	0.80	3.33	39.72
1947	3.65	2.14	2.84	4.66	3.84	2.87	3.64	1.06	4.34	2.05	5.60	2.40	39.09
1948	2.96	2.47	3.73	2.86	5.29	6.53	4.62	2.58	2.73	1.08	6.65	2.88	44.38
1949	4.78	3.31	1.66	3.39	5.21	0.84	4.10	3.83	4.40	3.10	2.10	3.57	40.29
1950	4.61	3.74	3.02	4.55	3.66	5.76	4.49	3.12	2.32	2.54	6.39	4.42	48.62
Av. 14 yrs.	3.41	2.67	3.41	3.82	4.63	5.18	4.98	3.36	4.21	2.94	4.40	3.37	46.38

PELHAM, MASS. (M.D.W.S. Commission)—Elevation, 1,130 feet
Record: July, 1939, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	2.99	1.19	6.14	0.68	3.80	6.06	5.62	2.17	4.54	4.34	5.92	5.13	48.08
1943	2.63	1.70	2.48	3.29	6.48	1.84	6.54	3.60	1.77	4.97	6.29	0.63	42.22
1944	1.26	1.88	4.04	4.50	1.84	7.72	4.01	2.51	7.44	2.40	4.51	2.81	44.92
1945	2.49	3.87	1.80	6.55	7.43	10.12	7.70	3.31	3.00	3.11	4.28	4.08	57.74
1946	2.32	3.60	1.74	2.51	6.87	4.89	4.42	5.06	5.21	1.56	1.12	3.05	42.35
1947	3.35	2.19	2.59	4.55	3.91	3.33	3.03	1.03	4.10	2.12	5.80	2.06	38.06
1948	2.42	1.95	3.51	3.32	6.44	7.05	4.33	3.12	3.03	1.22	7.65	2.99	47.03
1949	4.70	3.43	1.66	3.27	5.95	0.85	4.03	3.14	4.29	3.20	2.07	3.91	40.50
1950	4.42	3.92	2.63	4.26	3.58	5.33	4.10	3.33	2.46	2.52	6.25	4.46	47.26
Av. 11 yrs.	2.80	2.55	2.96	3.63	5.16	5.09	4.83	3.02	3.63	2.70	5.01	3.21	44.59

PEMBROKE, MASS. (Brockton Water Works Pumping Station)—Elevation, 65 feet
Record: January, 1916, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.39	2.15	7.29	1.10	1.53	3.86	3.58	3.79	2.56	3.58	4.86	3.41	41.10
1943	2.68	1.43	2.56	3.26	5.14	2.66	3.41	4.17	1.70	3.32	3.11	1.14	34.58
1944	2.23	1.62	3.65	3.34	0.31	3.94	0.41	0.73	7.16	2.10	7.49	3.38	36.36
1945	3.64	3.39	2.14	2.02	4.75	4.31	2.87	2.47	1.59	3.32	9.67	7.48	47.65
1946	3.32	2.36	1.60	2.59	4.22	3.99	1.80	10.16	2.42	0.30	1.13	3.06	36.95
1947	2.23	1.29	2.26	5.32	4.31	4.08	2.90	1.50	2.64	3.07	4.11	3.79	37.50
1948	6.13	1.72	3.27	2.85	8.27	3.45	6.23	2.92	1.24	7.41	4.36	1.75	49.60
1949	3.42	3.83	2.07	3.26	3.31	0.16	1.34	1.49	3.00	1.38	3.16	2.25	28.67
1950	3.25	2.90	2.78	3.14	2.32	2.09	0.99	4.43	2.85	1.40	7.14	3.61	36.90
Av. 35 yrs.	3.47	2.78	3.59	3.90	3.16	3.72	3.52	3.93	3.48	3.09	3.81	3.45	41.90

PEPPERELL, MASS. (East Pepperell)—Elevation, 225 feet
Record: August, 1935, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.88	3.05	7.65	1.35	3.55	4.00	6.35	2.49	3.04	3.27	5.12	5.97	49.72
1943	3.84	1.32	3.81	3.99	5.95	2.55	5.30	2.02	0.75	5.39	5.28	0.73	40.93
1944	2.40	2.50	4.45	4.12	0.80	9.03	2.19	0.49	7.21	2.17	4.87	4.54	44.77
1945	3.95	4.52	1.82	4.31	5.55	6.00	4.66	3.12	1.09	2.36	5.87	5.64	48.89
1946	3.93	3.40	1.55	3.34	7.26	3.01	3.16	7.60	4.08	0.96	0.78	4.25	43.32
1947	3.31	2.47	3.65	4.29	2.94	4.16	3.75	1.40	2.94	1.20	5.74	3.60	39.45
1948	3.60	2.46	2.96	3.07	6.25	5.57	4.67	1.59	0.52	2.10	6.56	1.77	41.12
1949	4.28	3.49	1.37	4.87	4.05	0.77	2.10	3.37	2.62	2.59	2.20	2.12	33.83
1950	4.83	3.43	3.54	2.72	1.54	1.75	1.99	3.88	2.06	3.79	6.03	4.09	39.65
Av. 15 yrs.	3.98	3.03	3.71	3.69	4.02	3.94	4.19	2.92	3.02	2.70	4.28	3.72	43.20

PERU, MASS.—Elevation, 1,700 feet
Record: January, 1913, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.42	2.18	8.12	2.09	5.26	3.35	6.87	3.36	5.40	4.58	5.23	4.33	54.19
1943	2.21	1.65	2.52	3.57	7.31	4.50	5.76	4.21	1.01	4.74	4.69	0.72	42.89
1944	1.48	2.19	5.05	3.86	2.21	5.15	4.68	2.34	5.81	2.66	5.33	3.62	44.38
1945	4.32	4.42	2.03	6.24	7.60	10.55	10.88	3.35	3.63	3.38	5.35	3.51	65.26
1946	2.79	3.43	1.25	2.69	7.46	3.90	5.62	2.74	5.91	2.47	1.58	3.33	43.17
1947	3.87	3.19	6.08	3.91	4.60	4.13	4.08	1.70	4.00	2.95	4.97	3.34	46.82
1948	3.18	3.28	4.60	3.00	7.77	9.06	2.13	2.53	0.93	2.47	4.91	12.48	56.34
1949	5.84	4.14	2.29	4.61	4.35	2.25	4.25	3.68	4.47	3.03	2.03	3.22	44.16
1950	4.69	4.28	3.21	3.29	4.88	4.12	4.46	4.07	1.47	2.36	8.35	3.91	49.09
Av. 38 yrs.	3.40	3.31	4.00	3.70	4.96	4.33	4.76	3.90	4.22	3.26	4.16	3.45	46.55

PETERSHAM, MASS. (Harvard Forest) (Hydrologic Network)
Record: January, 1940, to December, 1948

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1940	1.90	2.73	4.48	6.07	5.33	2.35	3.82	1.73	2.45	1.08	6.42	2.61	40.97
1941	1.64	1.68	1.13	0.67	2.05	3.29	3.90	2.04	1.42	2.17	3.09	2.76	25.84
1942	2.94	1.53	6.48	0.78	2.78	4.31	4.53	1.26	2.86	2.67	5.63	4.47	40.24
1943	1.67	1.38	2.32	3.49	4.97	1.94	4.51	2.66	1.72	5.08	5.78	0.72	36.24
1944	1.09	1.91	4.29	3.74	0.91	9.51	4.32	0.66	6.40	1.42	3.43	2.47	40.15
1945	2.71	3.91	1.66	4.87	5.30	7.92	6.02	3.27	3.27	2.72	3.89	4.06	49.60
1946	3.00	3.64	1.79	2.40	5.94	7.86	3.87	5.00	4.17	1.18	1.19	3.42	43.46
1947	3.14	2.21	2.73	4.19	4.06	3.51	4.37	3.02	4.08	1.45	5.12	2.87	40.75
1948	3.01	2.23	3.33	3.44	6.20	5.48	3.17	1.97	1.41	1.34	6.04	2.76	40.38
Av. 9 yrs.	2.34	2.36	3.13	3.29	4.17	5.13	4.28	2.40	3.09	2.12	4.51	2.90	39.72

PETERSHAM, MASS. (Harvard Forest)—Elevation, 1,100 feet
Record: January, 1916, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.32	2.19	5.94	0.78	2.09	4.37	5.00	1.58	3.02	2.73	5.76	4.42	41.20
1943	1.91	1.34	2.44	3.72	5.21	1.92	4.52	2.99	1.70	5.05	5.75	0.73	37.28
1944	1.13	1.83	4.34	3.59	0.91	9.48	4.28	0.63	6.40	1.49	3.54	2.61	40.23
1945	2.44	3.95	1.70	4.90	5.29	7.72	6.03	3.20	3.09	2.59	3.68	4.13	48.72
1946	2.97	3.57	1.70	2.39	5.65	7.81	3.96	5.00	4.08	1.10	1.06	3.37	42.66
1947	2.67	2.17	2.67	3.73	4.40	3.56	4.47	2.98	4.23	1.76	5.03	2.82	40.49
1948	2.81	2.32	3.28	3.41	6.01	6.65	3.12	2.10	1.50	1.30	6.10	2.80	41.40
1949	4.70	3.25	1.90	3.55	4.60	0.80	2.40	2.47	3.59	2.35	2.10	3.55	35.26
1950	4.65	3.60	2.70	3.15	2.50	5.01	1.90	3.50	1.41	1.83	8.92	3.83	43.00
Av. 35 yrs.	3.50	3.14	3.44	3.57	3.44	4.46	3.86	3.52	4.17	2.86	4.04	3.27	43.27

PETERSHAM, MASS. (Nichewaug) (M.D.W.S. Commission)
Record: July, 1939, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	4.19	1.94	6.30	0.94	3.35	5.79	4.81	1.92	3.59	3.84	5.56	3.74	45.97
1943	3.22	1.35*	2.44*	3.62	5.53	1.68	4.70	5.82	1.51	5.48	6.36	0.74	42.45
1944	1.34	1.57	4.32	4.61	1.43	8.08	3.62	1.97	7.01	1.96	3.79	2.33	42.03
1945	2.89	2.92	1.50	5.31	6.70	9.17	8.01	3.09	1.60	2.85	3.96	4.55	52.55
1946	2.80	2.97	1.96	2.47	6.18	7.29	3.52	4.02	3.94	0.99	1.43	2.88	40.45
1947	2.94	2.46	2.09	4.19	3.07	2.52	5.95	1.20	2.77	1.41	5.68	2.88	37.16
1948	3.25	2.06	3.86	3.18	6.15	5.45	5.29	2.33	2.64	1.38	6.57	2.00	44.16
1949	5.66	3.25	1.36	2.78	4.72	0.69	2.11	4.31	2.62	2.43	3.07	3.61	36.61
1950	5.19	3.41	2.39	3.73	3.21	4.24	3.01	3.07	1.57	1.94	6.54	4.24	42.54
Av. 11 yrs.	3.28	2.38	2.99	3.51	4.57	4.62	4.53	2.92	2.78	2.34	4.83	3.02	41.77

*Interpolated.

PHILLIPSTON, MASS. (Athol Water Works)—Elevation, 1,190 feet
Record: January, 1914, to December, 1950 (except January-September, 1920)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.24	1.92	7.22	1.19	2.78	4.92	6.35	1.55	3.26	3.77	4.66	4.90	45.76
1943	2.47	1.41	2.48	3.43	5.87	2.14	5.86	2.62	1.49	5.17	6.35	0.53	39.82
1944	1.41	1.85	4.05	3.51	1.34	8.85	4.32	0.59	5.40	1.73	3.17	2.51	38.73
1945	2.94	3.64	1.56	5.68	5.50	7.52	5.66	2.44	3.90	2.92	3.58	3.73	49.07
1946	2.45	2.88	2.00	2.58	6.89	4.23	4.97	5.43	4.40	1.19	0.98	2.62	40.62
1947	2.99	2.38	2.64	3.94	4.16	3.80	5.76	3.33	3.88	1.49	4.70	2.38	41.45
1948	2.36	2.05	3.18	3.71	6.58	5.52	2.51	2.18	1.94	1.62	6.68	2.84	41.17
1949	4.61	2.92	1.60	3.99	4.43	1.02	3.10	2.56	3.53	2.50	1.94	3.20	35.40
1950	4.53	2.62	2.14	2.94	2.52	5.33	2.70	4.44	1.23	1.81	7.12	3.97	41.35
Av. 36 yrs.	2.81	2.33	3.11	3.40	3.45	4.42	4.28	3.42	3.79	2.81	3.81	2.89	40.52

PITTSFIELD, MASS. (Airport)
Record: May, 1943, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1943	—	—	—	—	6.37	3.65	6.69	5.72	1.42	3.90	6.21	0.72	—
1944	1.58	2.64	4.00	4.26	2.65	5.86	7.34	3.11	5.43	2.39	4.17	2.98	46.41
1945	2.79	2.62	1.93	6.66	5.70	6.42	8.34	2.97	3.58	3.05	4.81	2.85	52.52
1946	1.86	3.05	1.27	2.75	6.88	4.19	5.47	3.85	6.00	2.61	1.35	3.02	42.30
1947	4.45	2.97	3.48	5.24	4.00	3.65	5.97	2.74	3.61	2.89	4.60	2.45	46.05
1948	2.44	2.20	3.74	4.65	7.23	10.32	2.03	2.81	0.95	1.98	5.00	9.34	52.69
1949	4.04	3.18	2.38	3.78	3.87	4.21	6.63	3.74	3.79	2.47	2.07	3.14	43.30
1950	3.91	3.76	2.70	2.79	2.91	4.19	5.05	3.45	2.81	1.55	6.36	2.89	42.37
Av. 7 yrs.	3.01	2.92	2.78	4.30	4.75	5.55	5.83	3.38	3.71	2.42	4.05	3.81	46.51

PITTSFIELD, MASS. (City Hall)—Elevation, 1,050 feet
Record: March, 1894, to December, 1948

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	1.77	2.02	5.85	1.57	3.90	2.41	6.03	1.49	5.32	3.08	5.81	5.24	44.49
1943	2.48	1.32	3.25	3.76	6.62	3.13	5.11	4.71	1.25	3.27	5.14	0.49	40.53
1944	2.15	2.36	4.47	3.45	2.38	4.57	6.19	3.33	4.96	1.75	3.91	3.30	42.82
1945	3.49	2.41	1.42	5.56	4.91	5.88	8.55	2.33	2.73	2.50	4.47	2.00	46.25
1946	2.59	2.91	1.14	2.35	6.00	3.86	4.94	3.39	5.35	2.34	1.05	2.80	38.72
1947	4.02	2.55	3.57	4.78	4.10	3.31	4.02	3.93	3.67	2.03	4.27	2.25	42.50
1948	2.23	2.53	3.44	3.92	6.56	6.18	1.53	2.85	0.91	1.31	4.57	8.88	44.91
Av. 53 yrs.	3.02	2.71	3.48	3.20	3.35	3.97	4.46	4.16	3.93	3.03	3.41	3.22	41.94

PLAINFIELD, MASS.—Elevation, 1,650 feet
Record: October, 1919, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	2.98	2.12	7.30	1.42	4.94	2.72	6.73	4.08	6.12	5.88	4.59	6.15	55.03
1943	2.59	1.73	3.07	4.46	9.33	3.87	6.17	2.36	1.23	6.01	6.40	0.71	47.93
1944	1.75	2.22	4.80	4.49	1.99	6.89	5.26	1.43	6.78	2.39	4.20	4.12	46.32
1945	3.84	4.14	1.76	7.47	8.68	6.47	8.26	3.27	3.26	3.50	3.87	3.48	58.00
1946	2.65	3.85	1.46	3.07	7.55	6.19	3.92	3.18	6.93	1.97	1.15	3.22	45.14
1947	4.47	2.62	4.44	4.47	3.80	3.63	6.85	2.87	2.72	1.96	4.83	2.52	45.18
1948	2.34	3.08	3.42	4.04	8.91	7.52	2.58	1.89	2.01	2.37	5.42	8.69	52.27
1949	4.27	3.43	1.85	3.72	5.16	1.63	3.80	4.20	4.21	2.85	1.35	2.19	38.66
1950	5.11	4.29	3.02	3.18	4.57	3.30	3.10	4.27	1.76	2.14	7.11	3.94	45.79
Av. 31 yrs.	3.30	2.84	3.75	3.78	4.61	4.68	4.69	3.70	4.46	3.51	4.33	3.27	46.92

PLYMOUTH, MASS. (U.S. Weather Bureau, 1887-1897)
(Water Works after 1898)—Elevation, 70 feet
Record: January, 1887, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	4.58	3.41	8.19	1.06	1.53	3.31	3.80	5.46	3.32	4.36	5.96	4.16	49.14
1943	4.68	1.78	3.93	3.20	5.06	1.99	3.17	2.01	3.55	3.94	3.17	1.32	37.80
1944	2.19	2.23	5.15	4.01	0.56	4.08	0.49	1.01	5.53	2.44	3.39	4.40	41.48
1945	5.29	4.83	2.64	1.94	4.25	4.55	2.85	3.31	1.78	4.23	10.42	9.36	55.45
1946	3.84	3.51	1.48	2.81	5.07	3.63	2.16	11.50	2.50	0.59	0.89	4.14	42.12
1947	2.78	1.97	3.35	5.30	3.01	4.30	3.62	1.32	2.27	3.05	3.71	5.03	39.71
1948	7.43	2.58	4.14	3.86	8.64	3.20	2.76	1.87	1.53	6.97	4.47	2.53	49.98
1949	4.09	4.47	3.00	5.50	3.57	0.03	1.26	1.38	2.51	1.08	3.56	1.96	32.41
1950	4.41	4.69	4.39	3.31	2.79	2.41	0.98	3.71	2.38	1.47	6.29	4.43	41.26
Av. 64 yrs.	4.33	3.93	4.48	4.20	3.30	3.25	3.15	3.70	3.52	3.77	4.14	4.09	45.86

PLYMOUTH, MASS. (Weather Bureau)—Elevation, 50 feet
Record: June, 1886, to December, 1898; January, 1905, to December, 1920; January, 1922, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.15	3.91	7.94	1.13	1.70	2.62	3.34	4.89	3.55	4.59	5.77	3.81	46.40
1943	3.39	1.45	2.50	3.52	6.19	1.91	3.55	3.02	2.23	3.96	2.91	1.14	35.77
1944	2.02	1.76	4.50	3.58	0.23	3.78	0.60	1.28	6.48	2.23	9.12	3.41	38.99
1945	5.00	3.79	2.05	1.77	4.13	4.71	2.63	3.43	1.72	4.67	8.11	9.18	51.19
1946	3.49	3.18	1.29	3.18	5.47	3.76	0.99	11.75	1.81	0.88	1.02	3.81	40.63
1947	2.32	1.51	3.17	3.84	5.07	3.79	3.52	1.36	2.32	3.45	3.77	4.80	38.92
1948	6.15	2.15	3.76	3.10	8.25	3.39	3.50	2.29	0.50	7.63	4.66	2.41	47.79
1949	3.65	3.17	3.07	4.47	3.57	0.02	1.71	0.85	2.48	—	3.65	2.35	—
1950	—	3.87	3.99	2.52	2.31	2.39	0.79	—	2.36	0.69	6.67	4.19	—
Av. 54 yrs.	4.09	3.70	4.30	3.99	3.33	3.40	3.22	3.82	3.54	3.82	4.02	3.90	45.13

PRINCETON, MASS. (Metropolitan District Comm.)—Elevation, 1,125 feet
Record: November, 1884, to October, 1892; January, 1897, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.74	3.08	7.74	1.38	4.07	5.72	6.37	2.08	2.57	3.32	5.21	5.43	50.71
1943	3.57	1.98	3.15	3.95	5.88	1.83	4.00	3.18	1.07	5.98	5.35	0.84	40.78
1944	1.78	2.66	4.69	4.01	1.76	7.72	1.45	0.96	7.54	2.10	4.50	3.08	42.25
1945	3.71	4.37	2.56	4.21	5.48	6.16	5.24	3.60	1.76	2.40	4.99	6.46	50.94
1946	4.07	3.95	1.99	2.69	6.39	3.39	5.63	4.73	6.80	1.26	1.44	4.19	46.53
1947	3.62	2.42	4.08	4.58	4.57	3.08	4.17	1.23	3.55	1.08	6.34	3.56	42.28
1948	5.18	2.77	4.44	3.03	7.60	5.95	5.67	1.45	1.00	3.14	6.95	2.83	50.01
1949	4.81	3.16	2.00	4.86	3.67	0.80	2.67	3.47	3.16	2.46	2.24	3.50	36.80
1950	4.93	4.46	4.30	3.86	2.86	2.69	3.69	4.50	1.54	3.46	6.41	4.75	47.45
Av. 61 yrs.	4.02	3.48	3.93	3.70	3.57	3.70	4.21	3.95	3.79	3.36	3.91	3.70	45.32

QUINCY, MASS. (Wollaston)—Elevation, 20 feet
Record: January, 1913, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.65	3.12	7.82	1.55	2.07	3.23	5.88	2.24	2.43	2.58	5.55	4.50	44.62
1943	4.32	1.59	3.58	2.88	5.31	1.32	2.80	0.88	2.05	4.98	2.97	0.97	33.65
1944	1.98	2.48	4.21	3.70	0.29	3.97	1.66	0.89	6.55	3.01	6.69	3.43	38.86
1945	4.32	4.50	2.09	2.29	4.93	6.98	2.41	3.59	1.42	2.61	9.45	7.77	52.36
1946	4.17	3.36	1.45	2.88	4.69	3.81	1.93	9.95	2.37	0.28	0.99	3.88	39.76
1947	2.39	1.41	2.66	4.63	4.71	4.18	3.88	2.22	4.17	1.87	5.66	4.78	42.56
1948	6.32	2.19	3.41	2.28	5.50	4.50	6.23	1.93	1.13	5.46	5.49	1.54	45.98
1949	3.49	3.71	1.36	3.86	2.98	0.66	1.33	2.92	3.94	1.83	3.79	1.88	31.75
1950	3.86	3.88	3.00	3.04	1.65	1.70	2.60	4.57	1.13	2.12	7.78	3.23	38.56
Av. 38 yrs.	3.76	3.32	3.61	3.76	3.13	3.61	3.48	3.81	3.34	3.01	3.78	3.55	42.16

READING, MASS. (Water Works Pumping Station)—Elevation, 80 feet
Record: January, 1899, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	4.25	2.98	7.20	2.02	3.34	3.19	5.08	1.82	2.18	2.99	4.72	5.61	45.38
1943	3.09	1.03	3.57	2.60	5.54	2.09	4.79	1.35	0.67	5.84	4.45	1.02	36.04
1944	2.63	2.26	4.22	3.84	0.83	5.32	2.56	2.83	7.22	2.65	6.03	3.18	43.57
1945	2.60	4.40	1.79	2.85	4.28	5.90	3.07	3.07	1.19	2.62	7.77	6.41	45.95
1946	3.91	3.06	1.57	2.74	5.26	3.39	1.90	8.64	2.37	0.37	1.02	4.09	38.32
1947	3.10	1.03	3.69	4.91	3.27	2.58	5.83	1.44	3.33	0.44	6.24	4.05	39.91
1948	4.33	2.11	2.84	2.63	5.38	4.63	4.83	1.08	1.00	3.08	5.41	1.41	38.73
1949	3.47	3.28	1.25	4.25	3.37	0.84	1.78	5.05	4.28	1.93	3.03	1.86	34.39
1950	4.41	3.12	3.67	1.95	1.38	1.38	1.91	4.19	1.56	3.27	6.31	3.53	36.68
Av. 52 yrs.	3.44	3.14	3.68	3.80	3.00	3.48	3.41	3.27	3.57	2.83	3.49	3.42	40.53

ROCHESTER, MASS. (Quittacas Pumping Station, New Bedford Water Works)—Elevation, 60 feet
Record: January, 1895, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	4.88	3.35	9.59	0.95	1.55	2.24	2.55	5.72	2.66	5.49	5.60	4.61	49.19
1943	4.20	2.11	3.83	3.93	3.71	1.62	3.69	1.92	1.54	4.14	2.76	1.43	34.88
1944	2.43	2.19	4.93	3.90	0.55	4.06	0.53	1.20	6.07	2.26	8.99	4.22	41.33
1945	4.58	5.77	2.57	2.63	4.50	3.41	1.18	3.24	2.00	4.01	9.61	10.13	53.63
1946	4.28	3.93	1.87	2.86	5.30	3.37	2.05	15.64	2.51	0.78	1.20	4.00	47.79
1947	3.24	1.05	3.33	6.01	3.81	3.90	4.67	1.34	1.93	3.69	4.40	2.31	39.68
1948	7.55	2.99	4.27	4.16	9.78	3.08	3.04	2.19	1.87	6.14	5.21	2.36	52.64
1949	4.43	5.26	2.61	5.56	3.76	0.00	2.29	2.10	2.19	1.27	3.33	2.76	35.56
1950	4.36	5.12	4.43	3.59	2.73	3.00	0.79	5.06	2.01	1.16	6.54	4.32	43.11
Av. 56 yrs.	4.15	3.83	4.39	4.10	3.40	3.36	3.16	3.90	3.33	3.61	3.96	3.98	45.17

ROCKPORT, MASS.—Elevation, 18 feet
Record: June, 1902, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	—	—	—	—	—	—	4.77	3.62	—	2.34	5.90	3.90	—
1943	4.11	1.29	3.06	3.05	5.39	1.66	3.42	1.42	1.77	3.34	3.02	1.17	32.70
1944	2.53	2.56	3.29	3.41	0.81	5.32	1.89	1.58	5.69	2.41	5.52	3.34	38.35
1945	4.21	3.48	1.81	2.48	3.46	3.03	3.21	1.93	2.50	2.89	7.62	9.34	45.96
1946	—	—	—	—	—	—	—	—	—	—	1.80	4.67	—
1947	2.78	1.62	2.29	4.16	4.70	3.24	5.45	1.52	2.40	0.66	5.98	4.62	39.42
1948	5.07	2.51	2.90	2.96	5.96	3.66	3.83	1.64	0.30	4.59	5.13	1.66	40.21
1949	4.07	3.25	1.66	3.08	3.47	0.46	1.75	1.20	5.63	1.85	4.42	1.71	32.55
1950	4.73	3.16	2.83	1.32	1.05	1.35	1.80	3.42	1.55	1.45	6.26	3.79	32.71
Av. 39 yrs.	3.62	3.12	3.37	3.76	2.96	3.22	3.46	2.84	3.43	2.98	3.76	3.61	40.13

RUTLAND, MASS. (West Rutland)—Elevation, 950 feet
Record: November, 1927, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.45	2.39	5.15	1.01	4.98	4.19	4.39	2.45	3.24	3.47	4.78	4.54	44.04
1943	2.98	1.24	3.46	3.93	5.17	1.57	4.23	1.44	0.68	5.64	6.03	0.73	37.10
1944	1.58	2.59	4.62	4.55	1.25	8.51	1.65	0.83	7.84	1.65	4.13	3.26	42.46
1945	3.75	4.26	2.11	4.49	5.40	6.52	5.77	3.42	2.00	2.95	4.11	4.48	49.26
1946	3.39	3.60	1.90	2.52	5.27	4.36	4.39	5.20	7.54	0.96	1.38	3.20	43.71
1947	3.08	2.39	2.50	4.75	2.90	3.25	5.31	0.65	3.41	0.67	6.61	3.69	39.21
1948	4.45	2.78	4.03	3.71	6.38	6.61	7.62	2.84	1.78	1.93	7.00	3.10	52.23
1949	4.46	3.71	2.06	3.19	4.30	0.81	2.85	4.15	3.02	2.45	2.44	3.87	37.31
1950	4.93	3.79	3.07	3.92	4.56	3.61	3.79	3.14	1.43	1.61	7.71	3.58	45.14
Av. 23 yrs.	3.60	2.95	3.60	3.48	3.96	4.34	3.97	3.58	4.34	2.77	3.77	3.28	43.64

RUTLAND, MASS. (North Rutland)—Elevation, 850 feet
Record: November, 1923, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.69	2.40	6.01	0.92	4.18	5.27	5.45	1.67	2.98	4.23	3.58	3.33	43.71
1943	3.29	1.81	2.54	2.55	4.49	1.88	4.81	2.68	1.12	5.00	5.08	0.32	35.57
1944	1.11	2.74	3.78	3.20	1.26	8.31	1.95	1.44	7.56	1.82	3.53	2.82	39.52
1945	2.07	4.48	1.89	4.82	5.26	6.75	4.27	3.78	1.64	1.48	4.97	4.05	45.46
1946	2.42	2.76	1.10	2.38	5.14	3.32	4.05	4.78	7.17	0.81	1.46	2.88	38.27
1947	2.52	2.31	3.47	4.33	2.85	2.73	3.43	1.19	3.77	0.89	6.04	3.10	36.63
1948	3.04	2.55	3.04	3.16	8.39	6.10	4.73	2.75	1.25	1.95	6.90	2.79	46.65
1949	3.98	2.33	1.43	4.17	4.19	0.61	2.81	4.58	1.85	2.56	1.22	2.55	32.28
1950	3.56	1.91	2.97	3.76	2.90	2.56	2.96	3.36	1.17	2.09	6.33	3.58	37.15
Av. 27 yrs.	3.20	2.96	3.44	3.58	3.65	4.04	4.05	3.53	4.38	2.88	3.91	3.04	42.66

RUTLAND, MASS. (Muschopauge Pond)
Record: April, 1931, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.58	1.99	6.43	0.97	4.53	4.63	5.69	1.64	2.70	3.88	4.43	4.88	45.35
1943	3.06	1.59	3.27	3.50	6.09	1.56	4.79	2.23	1.06	6.07	5.24	0.73	39.19
1944	1.37	2.13	4.15	4.17	1.17	8.10	1.32	0.67	7.50	2.01	4.16	3.60	40.35
1945	2.88	4.57	2.20	4.60	5.42	6.38	5.85	3.50	2.72	2.19	5.24	5.21	50.76
1946	3.06	3.03	1.49	2.63	5.52	3.74	4.91	6.75	6.23	1.09	1.44	3.39	43.28
1947	3.09	2.29	2.85	5.35	3.24	3.18	3.98	1.02	2.84	1.58	5.97	3.19	38.58
1948	4.07	2.27	3.86	2.89	7.81	6.22	5.87	1.84	1.03	3.26	7.13	3.14	49.39
1949	4.16	2.99	1.56	5.03	3.95	0.74	2.57	4.25	2.48	2.16	2.30	2.84	35.03
1950	4.44	3.02	3.09	3.73	3.32	2.48	4.81	4.24	1.55	2.99	6.64	4.14	44.45
Av. 19 yrs.	3.62	2.74	3.76	3.79	3.93	3.97	3.86	3.40	4.75	3.01	4.16	3.32	44.31

SALEM, MASS. (Sewage Pumping Station)—Elevation, 20 feet
Record: December, 1910; March, 1911, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.55	4.12	5.94	1.25	1.80	3.38	3.73	4.30	2.08	2.88	5.11	3.98	42.12
1943	2.72	1.17	3.75	2.61	5.30	1.79	3.74	1.55	1.68	4.52	3.44	1.02	33.29
1944	2.53	1.80	3.20	3.62	0.49	4.14	1.59	1.78	5.90	2.34	6.40	3.26	37.05
1945	2.49	3.19	1.65	2.98	4.29	6.26	4.29	3.36	1.26	2.65	6.72	6.60	45.74
1946	3.75	2.94	1.44	3.29	5.25	2.60	0.90	8.87	2.57	0.82	1.27	3.13	36.83
1947	2.16	0.72	2.06	3.83	3.56	2.27	4.56	1.76	2.92	0.51	5.65	3.04	33.04
1948	3.42	1.40	1.92	2.29	5.45	4.48	4.02	0.92	1.11	4.36	5.55	1.18	36.10
1949	3.17	3.14	0.88	3.53	3.79	0.72	2.07	4.24	4.92	2.30	3.93	1.77	34.46
1950	4.07	2.39	2.59	1.68	1.58	1.32	1.91	2.76	1.25	2.12	6.47	3.57	31.71
Av. 39 yrs.	3.08	2.68	3.23	3.75	3.29	3.31	3.43	3.42	3.41	2.85	3.64	3.31	39.40

SANDWICH, MASS. (Weather Bureau)
Record: January, 1946, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1946	3.85	3.41	1.44	2.96	4.91	3.75	1.69	17.85	2.59	0.34	0.89	3.79	47.47
1947	3.46	2.40	2.33	5.11	5.05	4.44	4.32	1.23	2.47	2.75	3.08	3.21	39.85
1948	6.40	3.52	4.00	5.43	9.08	2.50	1.68	0.90	1.15	5.63	5.50	2.11	47.90
1949	3.57	3.93	3.24	4.48	3.19	T	1.20	3.36	3.03	1.26	3.94	2.58	33.78
1950	3.44	4.33	4.02	3.64	3.75	2.32	1.42	3.14	1.87	1.16	6.57	3.93	39.59
Av. 5 yrs.	4.14	3.52	3.01	4.32	5.20	2.60	2.06	5.30	2.22	2.23	4.00	3.12	41.72

SCITUATE, MASS. (Greenbush, Water Co. Pumping Station)—Elevation, 20 feet
Record: January, 1930, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.30	3.03	7.49	1.19	1.68	2.66	3.98	2.47	2.40	3.11	6.02	3.98	41.31
1943	3.01	1.53	2.88	3.20	5.36	1.61	4.09	2.65	2.40	3.25	2.89	1.05	33.92
1944	2.18	1.83	3.92	3.42	0.18	3.27	1.74	0.54	9.32	2.43	7.26	3.00	39.09
1945	3.30	3.60	1.79	1.99	4.77	4.37	2.18	5.26	1.70	3.14	7.49	9.66	49.25
1946	3.92	2.87	1.50	2.67	4.34	3.72	1.20	8.08	2.44	0.32	0.95	4.54	36.55
1947	2.66	0.88	2.68	4.25	4.49	5.68	3.55	2.43	3.79	2.59	4.38	4.07	41.45
1948	5.95	2.00	3.39	2.77	7.03	2.78	5.72	3.12	1.05	5.32	4.95	1.49	45.57
1949	4.01	3.11	1.41	3.92	3.52	0.35	1.56	1.90	2.31	1.37	2.95	1.93	28.34
1950	3.73	4.12	3.49	2.28	1.51	1.87	2.67	4.52	2.17	1.77	6.72	4.00	38.85
Av. 21 yrs.	3.80	2.75	3.73	3.48	2.97	3.45	2.77	3.57	3.80	2.88	4.07	3.48	40.75

SHELBURNE, MASS. (Shelburne Falls)—Elevation, 370 feet
Record: April, 1914, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	2.67	3.28	6.87	1.78	5.00	5.13	6.14	3.45	5.58	2.85	7.27	6.82	56.84
1943	2.92	1.83	3.23	4.38	8.25	2.08	6.29	2.31	1.35	7.41	6.60	0.58	47.23
1944	1.81	2.45	4.75	4.48	1.82	7.10	4.58	2.64	6.59	2.24	3.77	4.73	46.96
1945	4.25	3.99	2.08	6.66	7.94	7.97	6.53	2.41	3.75	3.91	4.28	3.83	56.60
1946	3.46	3.33	1.38	2.16	7.34	6.03	3.84	2.94	5.08	2.49	0.97	4.91	43.93
1947	4.46	2.87	3.54	4.47	4.09	3.73	3.46	5.41	4.55	1.89	6.61	2.74	47.82
1948	3.03	2.98	3.06	3.39	7.87	5.53	3.27	2.08	1.48	2.14	4.97	4.86	44.66
1949	6.04	4.57	2.32	5.13	3.62	2.69	2.55	4.03	4.53	2.56	2.13	2.86	43.03
1950	5.37	4.18	4.37	3.13	4.10	3.24	2.20	4.05	2.43	2.37	6.46	5.44	47.34
Av. 36 yrs.	3.34	3.01	3.44	3.81	3.96	3.98	3.93	3.49	3.96	3.14	4.11	3.49	43.66

SHUTESBURY, MASS.—Elevation, 1,175 feet
Record: October, 1919, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.98	1.80	7.51	1.06	3.34	4.64	5.14	3.93	4.08	4.13	5.27	6.06	50.94
1943	3.13	1.17	3.32	3.51	5.95	1.88	4.87	4.35	2.24	4.76	5.03	0.59	40.80
1944	1.54	2.24	4.75	3.58	1.49	7.72	4.80	2.44	6.18	2.40	4.52	2.99	44.65
1945	3.27	4.24	1.60	6.04	6.58	10.34	8.11	2.83	4.02	2.93	4.62	4.56	59.14
1946	2.86	3.63	1.55	2.40	7.34	4.29	5.80	5.05	5.79	1.91	1.17	2.61	44.40
1947	3.47	2.49	2.53	4.50	4.64	3.82	2.59	2.29	4.08	2.37	5.82	2.86	41.46
1948	3.17	2.88	3.73	3.36	6.66	6.83	3.30	3.01	2.13	1.00	5.71	3.49	45.27
1949	5.35	3.00	1.43	3.16	5.12	0.82	3.45	2.29	2.87	2.76	2.03	3.80	36.08
1950	4.74	3.57	3.00	4.41	3.35	4.48	3.22	3.74	1.53	2.98	7.40	4.94	47.36
Av. 31 yrs.	3.72	3.21	3.67	4.08	4.22	5.00	4.34	4.13	4.65	3.19	4.38	3.82	48.41

SOUTHAMPTON, MASS. (Fomer Reservoir, Holyoke Water Works)—Elevation, 525 feet
Record: January, 1897, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	2.54	3.35	6.80	1.45	5.38	3.55	6.42	2.56	5.72	5.03	6.05	5.94	54.79
1943	2.92	1.53	4.05	3.96	6.93	3.65	6.14	1.75	1.72	7.02	4.95	0.63	45.25
1944	1.65	2.44	4.98	4.02	0.83	4.85	2.52	3.51	5.11	2.09	4.20	3.78	39.98
1945	3.82	5.31	2.11	6.03	7.13	5.28	7.07	3.32	5.04	2.21	4.00	4.38	55.70
1946	2.77	3.73	1.32	1.97	6.87	3.55	4.70	4.57	5.09	1.13	0.72	2.90	39.32
1947	3.23	2.69	3.68	3.98	5.81	3.74	3.58	4.05	3.06	1.04	6.77	1.88	43.51
1948	2.55	2.59	2.91	2.12	5.98	6.30	2.18	3.21	1.58	2.05	4.52	5.58	41.54
1949	5.78	2.83	3.10	3.91	4.36	0.54	3.35	3.50	4.13	2.15	2.01	2.48	38.14
1950	4.11	2.18	3.67	3.45	5.23	4.78	2.27	4.24	1.66	2.70	6.86	5.08	46.23
Av. 54 yrs.	3.80	3.60	4.04	3.99	4.34	4.37	4.28	4.28	4.30	3.57	3.96	3.72	48.25

SOUTHBOROUGH, MASS. (Cordaville, Metropolitan Water Works)—Elevation, 250 feet
Record: January, 1894, to June, 1944 (see Hopkinton)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	4.52	3.04	7.79	1.85	2.94	2.88	7.74	2.35	2.19	3.24	5.41	7.17	51.12
1943	3.30	1.67	4.10	3.66	5.07	2.60	5.00	1.60	1.04	6.07	4.28	1.37	39.76
1944	1.74	2.83	4.82	5.12	0.94	4.58							
(See Hopkinton)													
Av. 49 yrs.	4.07	3.90	4.43	4.09	3.37	3.82	3.86	3.81	4.05	3.49	4.05	4.01	46.95

SOUTHBOROUGH, MASS. (Sudbury Dam)—Elevation, 260 feet
Record: January, 1899, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	4.17	3.13	7.30	1.75	2.46	3.12	8.27	2.38	1.78	3.13	4.96	7.10	49.55
1943	3.37	1.33	4.28	3.43	4.67	2.27	4.42	2.00	0.70	5.71	4.12	1.17	37.47
1944	1.84	2.55	4.71	4.36	0.80	5.55	1.24	1.40	5.72	2.06	6.70	3.63	40.56
1945	3.08	5.22	2.13	3.08	5.16	6.60	3.32	4.00	1.66	2.29	7.12	6.55	50.21
1946	3.97	3.59	1.84	2.68	5.06	2.95	2.06	8.21	4.38	0.34	1.12	4.14	40.34
1947	2.83	2.22	3.08	4.67	3.47	3.30	5.07	2.19	3.19	0.90	5.20	4.29	40.41
1948	5.46	2.10	3.57	2.92	5.39	5.12	5.06	1.13	0.70	2.69	6.12	1.58	41.84
1949	3.55	3.40	1.89	3.82	3.93	0.97	1.75	3.94	2.45	1.67	2.61	2.22	32.20
1950	4.41	3.84	3.35	3.24	1.55	2.03	2.47	5.80	1.44	2.88	5.53	3.90	40.44
Av. 52 yrs.	3.73	3.59	4.06	3.77	3.17	3.64	3.41	3.44	3.53	2.82	3.68	3.71	42.55

SOUTHBRIDGE, MASS. (Hatchet Brook, Southbridge Water Supply Co.)—Elevation, 720 feet
Record: January, 1912, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	4.36	2.64	7.80	1.21	2.69	4.23	5.14	3.25	2.46	3.74	6.06	5.93	49.51
1943	3.84	1.96	4.23	3.91	5.15	2.82	4.50	1.47	0.88	6.01	5.47	0.92	41.16
1944	1.52	2.62	4.77	4.95	1.15	5.85	2.91	1.52	7.36	2.33	5.35	3.91	44.24
1945	3.26	5.08	2.29	4.63	5.25	4.96	2.14	3.59	1.35	2.65	5.93	5.79	46.92
1946	3.79	3.31	1.52	2.91	6.28	3.96	4.35	8.57	5.15	0.63	1.59	3.46	45.52
1947	3.12	2.03	3.01	4.68	3.12	3.56	6.22	3.19	3.53	2.07	6.30	2.53	43.36
1948	3.89	2.08	4.75	3.94	6.67	7.09	4.54	2.00	0.55	2.02	5.97	3.69	47.19
1949	4.64	3.33	1.86	3.48	4.57	0.27	1.05	4.90	2.26	1.74	2.60	3.33	34.03
1950	4.10	4.05	3.22	4.66	3.99	3.78	3.02	6.00	1.92	2.69	5.41	4.35	47.19
Av. 39 yrs.	3.67	3.34	3.94	3.97	3.90	3.97	4.03	4.10	3.98	3.13	4.03	3.61	45.67

SPRINGFIELD, MASS. (1848-1867, by Citizen of Springfield; 1868-1913, at United States Arsenal)—Elevation, 200 feet
Record: January, 1848, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.27	2.77	5.45	0.43	4.27	4.71	6.96	2.00	4.73	3.45	5.12	5.96	49.12
1943	2.97	1.59	3.23	3.07	5.76	2.78	6.59	0.90	0.89	4.50	4.34	0.69	37.31
1944	1.37	2.06	4.21	4.68	0.87	4.75	1.85	3.25	6.44	2.06	4.99	2.73	39.26
1945	3.78	3.34	1.90	6.05	6.73	5.66	5.57	4.09	1.66	2.12	4.00	5.42	50.32
1946	3.03	2.03	1.18	2.00	5.99	2.58	4.36	5.72	2.57	1.13	1.20	2.96	34.75
1947	3.81	2.57	2.33	4.07	5.63	3.09	3.52	3.66	4.03	3.10	5.43	2.46	43.70
1948	3.05	1.81	3.49	3.32	6.29	5.31	3.62	4.00	0.84	1.18	6.15	3.13	42.19
1949	5.03	2.18	2.99	2.97	4.59	0.75	1.96	4.89	2.67	2.42	1.97	3.53	35.95
1950	4.31	5.05*	2.20	3.04	3.83	3.84	2.77	5.22	2.01	1.72	3.33	4.36	41.68
Av. 103 yrs.	3.39	3.31	3.55	3.28	3.81	3.78	4.27	4.19	3.52	3.57	3.56	3.30	43.53

*Interpolated.

STERLING, MASS. (Metropolitan Water Works)—Elevation, 555 feet
Record: January, 1897, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	4.53	2.90	7.48	1.41	4.32	5.24	5.12	1.95	2.35	3.39	5.06	5.78	49.53
1943	3.41	1.65	3.16	3.74	5.56	1.65	4.04	2.17	1.03	6.30	4.95	0.72	38.38
1944	1.61	2.70	4.52	4.50	1.17	9.04	1.06	0.63	6.33	2.26	4.61	3.51	41.94
1945	4.73	4.58	2.46	4.34	5.49	6.69	4.90	3.94	2.40	1.87	5.64	6.29	53.33
1946	3.69	3.77	1.73	2.70	5.82	3.07	4.06	6.33	6.73	0.82	1.18	5.16	45.06
1947	3.17	3.00	3.62	4.53	3.90	2.71	3.20	1.14	3.92	1.29	6.86	4.32	41.66
1948	3.52	3.20	3.63	3.58	7.11	5.29	5.47	1.76	0.73	2.93	7.18	2.70	47.10
1949	4.47	3.28	1.99	4.37	3.71	0.47	2.25	3.10	3.81	2.34	2.62	3.87	35.28
1950	5.13	3.11	3.75	3.48	2.54	2.34	2.94	3.24	1.35	2.89	5.54	4.04	40.35
Av. 54 yrs.	3.68	3.48	3.94	3.77	3.41	3.81	3.70	3.47	3.66	3.04	3.83	3.85	43.64

STOCKBRIDGE, MASS. (Stockbridge Water Company)—Elevation, 875 feet
Record: October, 1919, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.02	1.38	5.19	1.84	3.74	3.73	6.47	2.36	6.23	4.99	6.89	3.44	49.28
1943	4.33	1.60	2.60	3.49	6.24	3.81	4.51	1.77	1.78	4.53	7.13	0.32	42.11
1944	1.94	1.55	2.80	4.48	1.23	6.78	7.19	1.62	4.90	2.42	3.66	2.87	41.44
1945	3.50	2.48	3.07	5.72	4.78	4.79	8.58	5.66	2.35	2.10	4.77	3.24	51.04
1946	2.71	3.60	1.05	1.86	6.10	3.49	5.30	3.38	6.48	2.55	0.70	2.82	40.04
1947	3.07	2.07	2.14	5.37	3.92	3.32	2.73	2.93	3.34	3.37	4.10	2.35	38.71
1948	2.10	2.05	4.28	3.00	6.44	8.36	3.45	3.47	1.91	1.59	4.60	10.62	51.87
1949	4.37	2.74	1.99	3.22	4.84	2.77	5.04	3.01	3.87	2.49	1.75	2.74	38.83
1950	4.35	3.00	2.20	2.53	3.20	4.69	3.37	3.29	1.92	1.40	6.44	3.12	39.51
Av. 31 yrs.	3.02	2.62	3.26	3.70	3.83	4.46	4.57	4.17	4.37	3.10	4.04	2.90	44.04

STOCKBRIDGE, MASS. (U.S.W.B.)—Elevation, 850 feet
Record: January, 1930, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.13	1.36	5.30	1.70	4.16	4.14	7.00	3.08	5.51	3.23	6.04	5.01	49.66
1943	2.46	1.50	3.53	3.43	5.58	2.96	6.50	2.38	1.90	3.89	5.32	0.75	40.20
1944	1.56	2.26	4.12	3.37	1.05	5.45	5.68	2.47	5.22	2.34	4.74	2.07	40.34
1945	3.83	2.97	2.66	5.74	6.54	6.28	11.73	3.99	3.95	2.34	5.02	3.55	58.60
1946	1.95	3.06	1.05	1.78	5.50	5.00	4.28	3.13	5.47	2.49	1.04	2.65	37.40
1947	3.51	2.82	2.99	4.50	4.29	3.30	3.47	1.80	2.98	3.05	4.65	2.22	39.58
1948	2.28	2.08	3.88	3.50	6.75	8.59	4.40	3.85	2.22	1.60	4.08	9.73	52.96
1949	4.40	3.06	1.57	2.78	4.78	3.19	6.15	2.93	4.25	2.38	1.71	3.30	40.50
1950	4.35	3.00	2.20	2.53	3.20	4.69	3.37	3.29	1.92	1.40	6.44	3.12	39.51
Av. 21 yrs.	3.19	2.39	3.27	3.24	4.03	4.55	4.78	4.01	4.53	2.78	3.78	3.12	43.67

STONEHAM, MASS. (Spot Pond, Metropolitan Water Works)—Elevation, 160 feet
Record: January, 1899, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	4.44	3.72	7.64	2.20	2.45	3.99	3.21	2.74	2.22	3.30	4.89	5.31	46.11
1943	4.08	1.42	4.52	3.48	5.35	1.99	4.54	1.90	1.59	5.91	4.02	1.19	39.99
1944	3.05	2.60	4.70	4.22	0.72	5.25	1.85	2.74	6.61	2.86	7.52	3.97	46.09
1945	5.51	4.96	2.41	3.45	5.07	5.62	3.41	3.81	1.31	3.66	9.12	7.19	55.52
1946	5.04	3.84	1.66	3.01	6.06	2.66	3.11	11.79	3.21	0.39	1.28	4.56	46.61
1947	3.36	1.36	3.56	5.17	4.92	3.05	5.06	2.39	3.11	0.79	7.40	5.11	45.28
1948	5.75	2.25	3.48	3.33	5.86	5.35	5.68	1.31	0.91	4.74	6.61	1.56	46.83
1949	3.31	4.23	2.84	5.03	3.93	0.75	2.21	1.53	8.88	1.81	3.53	2.34	40.39
1950	4.94	4.16	4.45	2.35	1.86	1.23	1.14	5.79	2.19	2.92	7.53	4.24	42.80
Av. 52 yrs.	4.01	3.74	4.13	3.98	3.22	3.74	3.34	3.55	3.70	2.99	3.71	3.82	43.93

SUDBURY RIVER WATERSHED, MASS. (Metropolitan Water Supply)
Record: January, 1875, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	4.42	2.96	7.39	1.73	2.51	3.08	7.90	2.34	1.89	3.20	5.10	7.02	49.54
1943	3.37	1.49	4.05	3.54	4.80	2.17	4.71	1.80	0.85	5.74	3.95	1.20	37.67
1944	1.77	2.60	4.68	4.68	0.91	5.13	1.80	1.65	6.33	2.09	6.54	3.53	41.71
1945	3.10	5.12	2.20	3.04	5.07	6.22	2.78	4.23	1.59	2.25	7.06	6.50	49.16
1946	3.83	3.41	1.71	2.65	5.01	2.86	1.81	8.58	4.32	0.45	1.24	4.19	40.06
1947	2.91	2.18	3.26	4.65	3.89	3.26	4.82	1.88	3.45	1.11	5.44	4.31	41.16
1948	5.19	2.18	3.41	2.91	5.70	4.88	4.83	1.36	0.88	2.86	6.31	1.78	42.29
1949	3.65	3.24	1.78	3.80	4.02	0.71	1.54	4.69	2.95	1.57	2.51	2.24	32.70
1950	4.38	4.09	3.52	3.26	1.61	2.01	2.64	6.52	1.47	2.60	6.11	3.82	42.03
Av. 76 yrs.	3.96	3.82	4.18	3.65	3.27	3.40	3.60	3.78	3.52	3.36	3.90	3.75	44.19

SWAMPSCOTT, MASS.
Record: January, 1930, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.29	4.34	6.72	1.61	1.70	1.84	3.51	2.65	2.07	2.29	4.70	4.09	38.81
1943	3.60	1.18	4.54	2.72	5.34	2.07	2.89	1.93	1.25	5.15	2.42	1.08	34.17
1944	2.32	2.36	3.84	3.58	0.48	3.74	1.95	2.49	5.19	2.31	4.99	2.61	35.86
1945	3.65	4.18	1.78	2.65	4.61	6.37	2.68	3.12	1.68	2.22	6.85	7.45	47.24
1946	3.84	2.92	1.68	2.48	4.79	2.78	1.26	9.27	1.95	0.29	0.93	3.68	35.87
1947	2.68	1.33	2.41	3.92	3.76	2.33	3.61	1.63	3.35	0.70	5.07	3.38	34.17
1948	4.36	1.60	2.53	2.28	4.78	3.27	5.40	1.17	1.40*	4.46	4.83	1.09	37.17
1949	3.25	2.80	1.52	2.37	2.92	0.55	1.82	2.03	5.99	1.62	3.76	1.61	30.74
1950	3.61	2.76	2.97	2.02	1.26	1.17	1.16	2.73	0.82	1.89	6.96	3.11	30.46
Av. 21 yrs.	3.86	2.92	3.66	3.41	2.98	3.37	2.99	3.08	3.31	2.77	3.66	3.22	39.23

*Interpolated.

SWIFT RIVER WATERSHED, MASS.
Record: January, 1916, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.67	1.80	6.70	0.99	3.04	4.95	5.03	2.19	3.85	3.87	5.70	5.32	47.11
1943	2.63	1.53	3.11	3.52	5.96	2.11	5.25	3.51	1.79	4.95	5.93	0.65	40.94
1944	1.31	2.07	4.43	4.13	1.34	7.97	3.93	1.75	6.53	2.10	4.09	2.72	42.37
1945	2.93	3.69	1.82	5.89	6.52	8.58	7.70	3.10	2.70	2.82	4.10	4.52	54.37
1946	2.83	3.39	1.71	2.69	6.37	5.12	4.55	4.68	4.56	1.33	1.14	3.32	41.69
1947	3.33	2.44	2.80	4.56	3.84	3.55	4.01	2.49	3.65	1.74	5.81	2.78	41.00
1948	2.91	2.19	3.67	3.46	6.22	6.59	4.43	2.34	2.14	1.30	6.66	2.79	44.70
1949	5.02	3.38	1.59	3.16	5.25	0.95	3.24	3.44	3.25	2.72	2.14	3.73	37.87
1950	4.88	3.78	2.58	3.98	3.32	4.75	2.96	3.68	1.60	2.16	6.60	4.13	44.42
Av. 35 yrs.	3.34	2.89	3.48	3.76	3.83	4.70	4.22	3.77	4.41	2.95	4.16	3.22	44.73

TAUNTON, MASS.—Elevation, 50 feet
Record: June, 1874, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	2.97	3.96	7.18	0.85	1.77	2.41	5.20	4.04	2.04	4.74	5.65	3.96	44.77
1943	3.30	1.82	3.02	2.99	4.90	2.03	4.33	2.95	1.02	3.38	3.21	1.07	34.02
1944	1.91	1.69	3.97	3.90	0.42	2.94	1.84	1.14	9.29	2.90	7.13	2.72	39.85
1945	3.55	4.09	1.92	1.69	3.88	3.51	2.29	2.74	1.61	2.71	8.39	7.06	43.44
1946	3.49	2.89	1.68	2.79	4.68	3.91	1.01	10.66	2.81	0.60	1.23	3.55	39.30
1947	2.65	0.84	2.77	4.08	5.59	5.44	5.84	1.45	2.95	2.05	4.79	3.30	41.75
1948	5.71	2.09	4.07	3.45	10.39	3.26	5.20	4.57	1.73	6.23	5.28	1.33	53.31
1949	3.41	2.88	1.12	3.65	3.83	0.05	1.95	2.08	3.19	1.96	2.85	1.84	28.81
1950	3.29	3.61	2.96	2.08	2.64	2.40	2.02	4.33	2.50	1.30	5.09	3.36	35.58
Av. 76 yrs.	4.33	3.76	4.09	3.99	3.48	3.21	3.75	3.92	3.64	3.74	4.11	3.86	45.88

TEMPLETON, MASS. (Baldwinsville)—Elevation, 930 feet
Record: January, 1907, to July, 1916 — January, 1919, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.52	1.17	6.02	0.87	3.58	5.92	4.91	1.68	3.00	2.66	5.32	4.16	42.81
1943	2.66	1.19	2.61	3.16	5.73	2.21	5.80	3.18	1.31	4.73	5.62	0.58	38.78
1944	1.04	1.93	4.05	3.31	1.13	8.71	3.88	0.60	6.84	1.95	3.34	2.72	39.50
1945	3.17	3.33	1.42	4.84	5.36	6.30	5.99	3.10	2.99	2.80	3.42	3.77	46.49
1946	2.48	3.05	1.59	2.40	5.11	3.97	3.45	5.85	5.60	0.69	1.13	3.73	39.05
1947	2.88	2.09	3.13	3.46	3.21	3.85	4.05	2.52	3.66	1.11	5.11	2.47	37.54
1948	2.47	2.04	2.89	3.16	6.68	4.55	2.40	1.47	1.37	1.29	6.29	2.94	37.55
1949	3.79	2.42	1.13	4.60	3.84	0.89	3.16	2.87	3.51	2.17	1.93	2.79	33.10
1950	4.78	3.03	1.95	3.23	2.61	4.89	2.84	4.32	1.24	1.36	7.82	3.42	41.49
Av. 41 yrs.	3.15	2.70	3.42	3.54	3.34	3.80	3.83	3.62	3.77	2.74	3.93	3.23	41.07

TISBURY, MASS.
Record: 1929 to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.69	3.45	7.90	0.88	1.98	2.74	3.07	6.86	3.66	4.20	4.79	4.27	47.49
1943	4.39	2.63	3.83	3.66	3.31	0.81	5.45	4.35	2.64	3.27	3.14	1.61	39.09
1944	3.28	1.98	6.08	5.72	1.75	1.60	0.75	1.28	4.15	2.57	9.33	3.30	41.79
1945	3.79	3.95	2.31	1.94	4.11	4.03	1.81	2.01	1.20	2.59	9.81	6.60	44.15
1946	3.56	3.58	1.59	3.68	5.30	3.24	2.42	10.79	1.55	0.51	0.96	4.23	41.41
1947	3.36	1.59	2.86	7.44	4.15	4.41	3.24	1.49	2.25	2.14	3.24	5.01	41.18
1948	5.25	2.80	3.67	4.27	8.09	2.23	1.93	0.96	2.81	6.15	5.71	2.25	46.12
1949	4.17	4.77	2.33	5.55	3.90	0.17	1.29	2.63	3.21	0.75	4.36	3.82	36.95
1950	2.96	3.82	2.33	3.46	2.47	3.67	1.11	4.04	2.62	1.19	7.17	4.19	39.03
Av. 18 yrs.	3.96	3.13	4.22	4.20	3.36	3.34	2.66	3.74	4.39	3.24	4.40	3.72	44.36

UXBRIDGE, MASS.
Record: January, 1931, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	4.94	3.07	8.26	1.10	2.56	3.50	4.83	3.23	1.66	3.35	5.61	8.08	50.19
1943	3.77	1.80	4.70	4.22	4.75	3.16	7.24	0.48	0.99	5.54	3.39	1.14	41.18
1944	1.61	2.47	4.80	4.61	1.07	4.48	1.51	1.84	9.95	2.60	6.08	3.95	44.97
1945	3.35	5.04	2.50	3.24	5.16	7.55	4.35	3.65	1.69	2.30	7.80	5.46	52.07
1946	3.72	3.55	1.38	2.35	5.58	4.60	1.59	7.97	4.30	0.39	1.06	3.95	40.44
1947	2.73	2.14	3.70	4.00	3.73	4.40	5.45	1.67	3.62	1.54	4.61	3.37	40.96
1948	5.35	1.91	4.01	3.39	6.14	4.24	4.94	1.30	0.85	2.84	6.06	2.64	43.67
1949	3.90	3.28	2.09	3.85	4.26	0.45	1.42	5.83	2.96	1.64	2.69	2.21	34.58
1950	3.83	4.60	3.80	3.74	2.41	2.02	2.89	4.21	1.27	2.58	6.36	4.20	41.91
Av. 20 yrs.	4.00	3.27	4.33	3.66	3.29	4.04	3.68	3.96	3.89	2.71	4.15	3.66	44.64

WAKEFIELD, MASS. (Water Works Pumping Station, Crystal Lake)—Elevation, 92 feet
Record: January, 1928, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.43	3.44	4.84	2.06	1.69	3.87	3.05	3.05	1.98	2.83	3.70	4.58	38.52
1943	3.52	1.24	3.20	2.59	4.53	1.54	3.59	1.48	1.42	3.73	3.48	0.96	31.28
1944	2.50	1.80	3.46	3.78	0.67	4.99	2.30	3.22	5.64	2.53	5.76	2.63	39.28
1945	2.44	3.74	1.81	2.80	3.97	6.45	2.43	3.38	1.13	2.62	6.50	4.89	42.16
1946	3.49	3.18	1.30	2.37	4.79	2.80	1.98	9.04	3.10	0.42	1.27	3.85	37.59
1947	2.79	1.48	2.75	4.27	4.14	2.52	4.69	2.81	2.57	0.52	5.39	3.29	37.22
1948	5.79	2.40	3.61	2.47	4.66	4.55	5.37	0.94	0.93	2.54	5.18	1.59	40.03
1949	3.07	3.08	1.78	3.80	3.18	0.65	1.72	4.22	3.82	1.76	2.67	1.73	31.48
1950	4.27	2.96	4.04	1.99	1.54	1.20	1.56	4.62	1.95	2.34	5.21	3.69	35.37
Av. 23 yrs.	3.44	2.71	3.54	3.52	2.92	3.60	2.93	3.38	3.57	2.83	3.26	3.16	38.86

WALPOLE, MASS. (East Walpole) (Bird & Son)—Elevation, 90 feet
Record: January, 1902, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.90	2.96	7.63	1.28	1.87	2.59	4.71	2.73	2.40	3.39	5.65	4.92	44.03
1943	3.31	1.16	3.27	3.76	5.47	1.53	4.36	1.46	1.23	4.71	2.82	1.05	34.13
1944	1.93	2.23	4.36	3.94	0.25	3.97	2.52	1.41	8.13	3.10	6.50	2.78	41.12
1945	3.51	4.83	2.28	2.69	4.32	6.10	3.03	3.67	1.49	2.57	9.22	7.36	51.07
1946	3.62	3.08	1.29	2.37	5.77	4.48	1.37	10.74	2.51	0.18	1.10	3.83	40.34
1947	2.72	1.37	2.87	4.82	4.97	4.60	4.01	1.91	5.10	1.45	5.80	4.61	44.23
1948	5.78	2.33	3.34	3.42	5.95	4.10	5.05	1.15	1.15	6.18	6.47	1.50	46.42
1949	3.14	3.51	1.58	4.59	3.70	0.32	0.72	4.57	3.65	2.26	3.91	1.84	33.79
1950	3.56	4.13	3.35	3.63	1.76	1.77	2.49	4.87	2.99	1.77	7.85	3.71	41.88
Av. 49 yrs.	3.59	3.12	3.56	3.79	3.11	3.39	3.59	3.60	3.45	3.11	3.54	3.54	41.39

WALTHAM, MASS. (Water Works Pumping Station)—Elevation, 20 feet
Record: January, 1880, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	4.07	2.04	6.77	1.45	2.13	4.04	4.96	2.79	1.98	3.21	5.13	4.56	43.13
1943	2.56	1.06	3.49	3.40	4.47	2.70	3.82	0.86	1.07	4.06	3.40	1.01	31.90
1944	2.01	1.97	3.67	3.90	0.61	4.13	1.81	1.87	5.35	2.81	5.14	2.92	36.19
1945	2.33	2.92	1.95	2.67	4.69	6.62	2.72	3.81	1.23	3.02	6.71	4.87	43.54
1946	3.91	2.96	1.58	2.64	5.09	2.91	2.13	9.82	2.70	0.66	1.17	3.43	39.00
1947	2.59	0.95	3.25	4.19	3.69	3.13	5.05	0.93	3.96	0.98	6.66	3.05	38.43
1948	3.85	1.72	2.40	1.77	5.11	4.59	4.95	1.31	0.94	2.76	5.79	1.34	36.53
1949	3.38	3.03	1.15	4.58	3.29	0.87	1.65	5.18	3.85	1.49	2.35	1.87	32.69
1950	3.74	3.17	3.18	2.68	1.58	1.30	2.23	5.57	1.24	2.37	5.15	3.20	35.41
Av. 71 yrs.	3.50	3.25	3.48	3.47	3.22	3.42	3.62	3.65	3.58	3.31	3.58	3.35	41.43

WARE, MASS. (Ware Center)—Elevation, 520 feet
Record: October, 1919, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.53	1.70	5.30	1.07	3.41	4.09	4.78	2.75	3.48	3.56	5.12	4.79	43.58
1943	2.54	1.87	4.27	3.17	6.27	2.69	6.18	3.39	1.24	3.90	4.93	0.74	41.19
1944	1.27	1.89	4.17	4.36	0.70	7.95	1.43	1.97	6.77	1.92	5.50	3.88	39.81
1945	3.16	2.85	1.59	5.16	6.01	8.29	7.19	4.36	2.00	2.29	4.72	4.92	52.54
1946	2.64	3.24	2.09	2.65	3.08	6.06	4.25	4.37	4.34	0.95	1.34	2.70	37.71
1947	2.96	3.07	2.02	5.42	2.91	3.40	5.06	2.41	2.59	1.51	4.60	2.93	38.88
1948	2.71	2.09	3.86	2.56	6.26	6.85	4.38	1.96	1.70	1.45	5.76	2.83	42.41
1949	4.40	3.20	1.19	3.43	5.95	1.22	4.19	3.28	1.96	2.58	2.17	3.70	37.27
1950	4.08	3.93	2.47	2.82	2.91	4.16	2.90	4.12	0.94	1.98	5.76	3.65	39.72
Av. 31 yrs.	3.14	2.73	3.00	3.38	3.55	4.82	4.30	3.63	3.97	2.61	3.71	3.12	41.96

WARE RIVER WATERSHED, MASS. (Above Coldbrook)
Record: January, 1924, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.53	2.23	6.05	0.99	4.06	4.88	5.70	1.95	3.07	3.51	4.51	4.19	44.67
1943	3.05	1.51	2.93	3.51	5.04	1.83	4.42	2.77	0.97	5.39	5.86	0.60	37.88
1944	1.24	2.37	4.28	3.99	1.32	9.15	2.10	1.05	7.63	1.66	3.49	3.07	41.35
1945	3.02	4.21	1.84	4.96	5.39	6.51	5.59	3.77	1.64	2.49	4.03	4.06	47.51
1946	2.83	3.28	1.76	2.34	5.39	4.42	4.22	4.71	7.12	0.96	1.31	2.99	41.33
1947	2.86	2.30	2.90	4.44	2.91	3.02	5.35	1.39	2.81	0.86	6.01	3.04	37.89
1948	3.50	2.40	3.49	3.33	6.78	6.18	5.57	2.19	1.57	1.83	6.83	2.84	46.51
1949	4.32	3.16	1.58	3.36	4.42	0.67	2.57	3.97	2.66	2.47	1.93	3.15	34.26
1950	4.33	3.00	2.65	3.56	3.50	3.42	3.29	3.12	1.43	1.88	6.98	3.31	40.47
Av. 27 yrs.	3.30	2.79	3.40	3.48	3.69	4.14	4.17	3.49	4.30	2.91	3.88	3.07	42.62

WAREHAM, MASS. (Onset Water Co.)—Elevation, 60 feet
Record: September, 1917, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	6.10	3.00	8.54	1.15	2.29	2.53	2.86	6.90	3.94	4.13	6.01	4.31	51.76
1943	5.10	2.73	4.37	3.09	4.35	1.55	3.86	2.68	3.51	3.83	3.10	1.25	39.42
1944	3.59	2.71	5.22	4.72	0.56	3.45	0.65	1.44	4.50	1.94	9.56	4.40	42.74
1945	4.23	4.80	2.91	1.66	4.11	5.39	3.49	3.14	1.35	4.36	11.87	7.15	54.46
1946	4.08	3.60	1.73	3.40	5.19	4.30	3.11	13.12	2.03	0.44	0.93	4.18	46.11
1947	2.84	2.59	3.05	6.25	3.50	3.93	2.78	1.30	2.06	3.33	3.04	4.12	38.79
1948	7.19	3.84	4.34	5.22	10.22	3.59	2.81	1.09	2.04	7.64	5.71	2.90	56.59
1949	4.29	4.85	4.53	4.89	3.43	T	2.02	2.52	3.11	1.05	3.50	3.16	37.35
1950	3.86	4.81	4.34	3.49	5.64	3.06	1.07	2.79	2.42	1.38	6.66	3.88	43.40
Av. 33 yrs.	4.28	3.78	4.42	4.07	3.48	3.76	3.16	4.01	3.77	3.24	4.23	3.90	46.10

WAREHAM, MASS. (East Wareham) (U.S. Weather Bureau)
Record: January, 1927, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	4.35	3.69	8.45	1.04	1.79	2.14	3.34	6.94	3.55	4.12	6.13	4.11	49.65
1943	3.50	2.41	3.83	2.31	4.45	1.38	3.55	2.70	2.29	4.08	3.17	1.37	35.04
1944	3.49	2.21	4.94	4.61	0.47	3.31	0.67	1.45	4.29	2.11	9.92	3.87	41.34
1945	4.28	4.76	2.79	1.84	3.71	5.17	2.77	3.27	1.38	4.68	10.61	8.11	53.37
1946	4.32	2.80	2.02	3.27	4.75	3.61	3.00	12.61	1.10	1.24	0.88	4.34	43.92
1947	2.95	1.04	2.67	5.40	5.22	3.52	2.59	1.11	1.99	3.46	3.41	4.16	37.52
1948	6.67	3.61	4.71	4.63	9.18	4.18	2.79	0.74	1.13	7.04	5.36	2.54	52.58
1949	3.64	5.33	3.88	4.92	3.02	0.00	1.97	2.34	3.37	0.84	3.47	2.83	35.61
1950	3.64	4.54	4.32	3.46	5.24	2.34	1.22	3.44	2.21	0.98	6.91	4.25	42.55
Av. 24 yrs.	4.17	3.16	4.27	3.97	3.32	3.61	2.88	3.78	3.98	3.38	4.41	4.05	44.98

WARREN, MASS.—Elevation, 650 feet
Record: 1911 to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.59	1.81	6.65	1.09	4.23	4.61	4.84	2.24	3.23	4.10	4.74	4.65	45.78
1943	2.61	1.69	3.32	3.22	6.57	2.75	5.85	1.43	0.96	5.72	5.03	0.86	40.01
1944	1.35	2.26	4.57	4.25	0.96	7.16	1.67	2.88	6.79	1.90	4.35	2.87	41.01
1945	2.98	3.30	2.27	4.90	5.05	5.59	7.18	3.86	1.80	2.55	3.59	5.37	48.44
1946	3.50	3.05	1.58	2.29	4.88	3.70	5.07	6.04	4.29	0.74	1.67	3.32	40.13
1947	3.24	2.39	2.36	5.67	2.40	2.88	4.81	1.14	3.32	1.35	5.55	2.28	37.39
1948	2.99	2.05	3.60	3.08	6.59	7.39	5.84	2.52	0.69	1.89	5.91	2.61	45.16
1949	3.88	2.76	1.57	3.26	3.27	0.73	3.14	3.07	1.75	1.90	2.39	3.58	31.30
1950	4.45	3.44	2.98	3.33	3.11	3.35	4.47	3.94	2.23	2.17	5.61	4.23	43.31
Av. 34 yrs.	3.18	2.82	3.53	3.36	3.40	4.03	4.26	3.62	3.87	2.62	3.48	2.91	41.08

WARWICK, MASS.—Elevation, 1,000 feet
Record: July, 1920, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.00	1.45	6.22	1.49	3.73	5.19	6.57	2.31	4.10	3.88	5.47	5.23	48.64
1943	2.36	1.84	3.11	3.69	6.63	2.37	3.68	3.51	3.54	6.25	6.10	0.55	43.63
1944	1.43	2.29	4.16	3.43	1.09	7.03	6.46	1.27	7.95	2.60	3.71	2.35	43.77
1945	3.40	3.64	1.98	7.16	8.05	7.48	8.19	3.38	3.23	3.68	4.49	4.43	59.11
1946	3.12	3.43	1.44	2.70	7.09	3.59	5.08	5.89	4.98	1.54	1.16	3.82	43.84
1947	3.69	3.15	3.12	4.32	4.38	4.74	2.83	2.47	3.98	1.95	6.13	3.14	43.90
1948	2.99	2.48	3.26	3.27	8.17	7.08	3.22	2.88	0.94	1.80	5.57	2.44	44.10
1949	4.10	3.08	1.94	4.53	4.05	1.67	2.29	3.10	3.30	2.99	1.85	3.18	36.08
1950	5.05	3.57	2.72	4.02	3.35	4.11	2.66	5.31	1.34	2.56	5.94	4.39	45.02
Av. 30 yrs.	3.29	2.75	3.66	3.96	4.17	4.72	4.47	3.91	4.30	3.30	4.16	3.29	45.98

WEBSTER, MASS. (Slater & Sons Mill)—Elevation, 450 feet
Record: January, 1880, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.43	1.70	7.58	0.74	2.23	2.89	4.23	2.46	1.74	4.04	4.29	4.51	39.84
1943	2.58	1.50	3.45	3.53	4.43	1.88	4.49	1.02	0.43	4.99	4.78	1.03	34.11
1944	1.10	2.39	4.75	4.80	1.15	4.86	2.02	1.06	8.68	1.69	5.63	3.12	41.25
1945	2.72	3.40	1.62	4.18	5.63	5.32	2.48	2.43	1.07	2.32	4.31	4.22	39.70
1946	3.37	3.35	1.56	2.20	5.41	4.19	2.02	9.16	3.01	0.41	1.34	4.43	40.45
1947	2.76	2.71	3.04	4.39	3.12	4.42	5.36	3.22	2.30	1.74	4.54	3.14	40.74
1948	3.83	1.86	4.02	3.22	5.61	4.67	5.64	2.07	1.16	2.49	5.86	2.89	43.32
1949	4.06	3.06	1.78	2.65	4.12	0.31	1.28	3.58	2.57	1.69	2.75	2.54	30.39
1950	3.95	3.95	2.81	3.93	3.19	2.98	2.34	5.44	1.24	1.56	6.24	3.33	40.96
Av. 71 yrs.	3.56	3.47	3.88	3.36	3.24	3.45	3.61	3.78	3.58	3.08	3.47	3.55	42.03

WENDELL, MASS.—Elevation, 1,200 feet
Record: October, 1919, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.83	1.99	7.47	1.31	2.62	4.45	5.41	2.21	4.02	4.06	5.34	5.95	48.66
1943	2.79	1.59	3.93	3.54	6.67	2.14	4.65	2.39	2.54	4.22	6.25	0.61	41.32
1944	1.54	2.63	4.99	3.75	1.51	6.73	5.97	1.38	6.65	2.13	4.21	2.79	44.28
1945	3.70	4.32	2.12	6.27	7.14	6.64	9.34	2.55	3.78	2.72	4.23	5.60	58.41
1946	3.26	4.04	1.42	2.83	7.00	4.22	6.02	4.53	4.71	1.72	0.96	4.12	44.83
1947	3.70	3.32	3.11	4.37	3.77	4.38	2.69	3.32	4.56	1.63	6.18	3.29	44.32
1948	3.17	2.90	3.95	3.37	6.46	6.66	6.16	2.19	2.66	1.28	5.69	3.34	47.83
1949	5.29	3.56	2.19	4.05	4.39	0.40	2.71	4.21	3.33	2.79	1.70	3.79	38.41
1950	5.68	4.37	3.58	4.08	3.44	5.17	2.21	3.86	1.48	2.87	5.68	3.65	46.07
Av. 31 yrs.	3.52	2.93	3.60	4.16	4.08	4.77	4.26	3.77	4.60	3.18	4.30	3.41	46.58

WEST BOYLSTON, MASS. (Louis C. Campbell)
Record: December, 1944, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1944	—	—	—	—	—	—	—	—	—	—	—	2.40	—
1945	2.99	4.64	1.62	4.69	5.63	6.19	4.55	5.72	2.03	1.97	4.09	4.46	48.58
1946	3.05	2.90	1.46	2.94	6.42	2.98	4.11	7.95	5.40	0.92	1.52	3.45	43.10
1947	3.24	2.08	3.29	5.07	3.30	3.00	4.44	3.30	3.37	1.22	5.46	2.73	40.50
1948	3.40	2.69	3.40	3.52	7.70	6.20	4.82	1.61	0.95	2.78	6.83	1.74	45.64
1949	2.98	2.01	1.36	4.69	3.64	0.58	1.28	2.11	2.43	1.35	1.33	2.53	26.29
1950	3.56	4.33	2.98	5.19	2.97	2.55	3.08	3.41	1.64	3.03	4.65	3.68	41.07
Av. 6 yrs.	3.20	3.11	2.35	4.35	4.94	3.58	3.71	4.02	2.64	1.88	3.98	3.10	40.86

WEST BROOKFIELD, MASS.—Elevation, 630 feet
Record: January, 1913, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.45	1.33	6.08	0.68	3.25	3.97	4.13	2.82	2.76	3.42	4.88	4.77	41.54
1943	2.36	0.98	2.82	3.04	6.07	3.10	6.02	1.54	0.73	6.25	4.58	0.80	38.29
1944	1.50	2.21	4.57	3.85	1.81	6.55	1.95	1.78	5.65	1.79	3.31	2.78	37.75
1945	3.18	3.62	1.63	5.31	4.69	6.21	6.28	3.19	2.17	2.48	4.04	4.87	47.67
1946	3.28	2.83	1.42	1.94	3.14	4.40	4.15	5.40	4.49	0.65	1.45	2.87	36.02
1947	3.61	2.04	2.18	5.73	2.67	2.45	3.96	1.20	3.12	1.82	4.78	2.31	35.87
1948	1.59	2.06	3.00	3.86	5.93	7.99	5.95	2.97	1.18	1.60	6.07	1.85	44.05
1949	3.36	2.51	0.98	2.80	3.47	0.66	2.64	3.40	2.09	1.87	2.09	3.47	29.34
1950	4.17	3.96	3.40	2.96	2.56	3.38	3.93	3.83	1.29	2.44	4.28	3.78	39.98
Av. 38 yrs.	2.88	2.75	3.36	3.28	3.28	3.84	4.22	3.60	3.87	2.78	3.39	2.83	40.08

WESTFIELD, MASS. (West Parish Filters, Springfield Water Works)—Elevation, 475 feet
Record: January, 1906, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	4.15	2.52	7.20	1.19	5.11	3.89	6.98	2.24	5.39	5.15	6.56	7.11	57.49
1943	4.19	1.99	3.41	3.83	7.13	3.70	6.00	1.44	2.59	7.25	4.64	0.77	46.94
1944	1.64	2.88	5.48	4.49	1.30	4.40	1.84	1.97	7.59	2.52	6.24	4.57	44.92
1945	4.18	4.86	2.48	5.44	7.50	5.70	7.94	4.92	3.47	2.63	5.43	4.90	59.45
1946	2.86	3.97	1.75	2.49	7.17	2.82	5.64	2.71	4.90	1.49	0.92	3.35	40.07
1947	3.70	3.52	3.96	4.97	5.78	3.40	4.69	3.49	3.26	4.15	6.97	3.33	51.22
1948	3.76	2.45	4.27	3.40	5.69	6.63	1.96	3.39	1.87	2.28	4.92	9.69	50.31
1949	5.90	3.98	1.73	4.63	4.57	0.55	2.94	3.22	3.67	2.69	2.17	3.16	39.21
1950	5.12	5.08	4.13	3.45	4.54	5.19	2.18	4.27	1.31	3.30	7.33	5.89	51.79
Av. 45 yrs.	3.85	3.74	4.00	3.99	4.24	4.14	3.90	4.02	4.13	3.67	4.34	3.97	47.99

WESTFIELD, MASS.—Elevation, 150 feet
Record: January, 1918, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	4.12	2.51	6.53	0.89	4.40	5.03	5.47	1.81	4.75	4.79	5.73	7.03	53.06
1943	3.82	1.67	5.11	3.39	5.26	3.74	5.52	1.15	1.88	6.53	5.06	0.69	43.82
1944	1.70	2.59	5.29	4.15	0.94	4.29	2.54	1.00	7.06	1.92	5.89	4.11	41.48
1945	3.80	4.35	2.31	5.33	6.83	7.47	7.30	4.72	2.82	2.63	4.89	4.99	57.44
1946	2.86	3.40	1.67	2.26	6.72	3.19	7.42	3.93	4.52	1.23	0.74	3.24	41.18
1947	3.13	3.15	3.62	5.00	5.68	3.13	3.64	4.55	4.45	3.55	7.00	3.30	50.20
1948	2.84	2.17	3.56	2.52	5.44	6.71	2.61	3.95	1.70	1.37	5.88	6.28	45.03
1949	5.22	3.78	1.39	4.16	5.07	0.30	2.70	3.09	3.25	2.48	1.94	2.62	36.00
1950	4.52	4.65	3.41	3.01	3.85	4.29	2.17	4.28	1.39	3.11	5.81	4.85	45.34
Av. 33 yrs.	3.73	3.21	3.95	3.74	4.06	4.42	4.23	3.87	4.02	2.98	4.34	3.55	46.10

WESTFIELD, MASS. (State Sanatorium)—Elevation, 210 feet
Record: January, 1930, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.89	2.19	6.19	0.75	3.99	4.69	5.65	2.89	4.73	4.46	5.75	6.35	51.53
1943	2.90	1.40	3.28	3.44	5.19	3.23	5.79	0.71	1.55	6.04	5.00	0.60	39.13
1944	1.54	1.98	4.52	4.71	1.68	4.40	1.92	1.18	7.22	1.86	5.01	3.59	39.61
1945	3.12	3.52	2.13	5.63	6.87	6.24	6.26	4.89	2.25	2.09	4.29	4.93	52.22
1946	2.57	2.89	1.61	2.27	7.05	3.05	6.42	3.87	4.21	1.10	0.76	2.48	38.28
1947	2.86	2.36	2.75	4.74	4.95	3.01	3.05	3.03	4.71	3.60	6.41	2.08	43.55
1948	2.73	1.99	3.61	2.57	5.63	6.44	2.65	4.41	1.37	1.01	5.52	4.66	42.59
1949	4.83	3.32	1.25	4.19	3.84	0.39	1.92	4.94	2.92	2.18	2.08	2.68	34.54
1950	4.41	4.05	3.38	3.25	4.14	2.82	2.12	4.27	1.39	2.43	5.25	4.85	42.36
Av. 21 yrs.	3.80	2.89	3.74	3.59	4.13	4.51	4.02	3.71	4.01	2.87	4.06	3.38	44.71

WESTHAMPTON, MASS. (White Reservoir, Holyoke Water Works)—Elevation, 750 feet
Record: January, 1919, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	2.54	3.35	6.80	1.45	5.38	3.38	7.00	2.52	5.89	4.99	5.65	5.85	54.80
1943	2.86	1.49	3.83	3.94	6.91	2.63	6.22	2.13	1.71	7.56	4.66	0.66	44.60
1944	1.47	2.36	4.51	4.01	0.92	4.69	3.52	2.37	6.64	2.05	4.53	3.88	40.95
1945	3.69	4.29	2.18	5.34	7.86	6.04	8.66	3.19	3.80	2.06	3.92	4.31	55.34
1946	2.59	2.78	1.68	2.23	6.96	2.76	4.70	2.91	5.13	1.66	0.72	2.89	37.01
1947	3.78	2.59	3.37	3.97	5.58	3.73	4.54	3.95	3.30	3.03	7.39	2.54	47.77
1948	2.49	3.18	3.18	2.97	6.13	6.07	2.12	4.86	1.14	1.95	4.69	6.31	45.09
1949	5.70	2.96	2.42	4.30	4.52	0.65	3.09	3.60	4.01	2.46	2.35	3.13	39.19
1950	4.63	4.16	4.55	3.21	5.56	3.20	2.04	3.67	1.79	2.59	6.73	5.14	47.27
Av. 32 yrs.	3.32	2.98	3.76	3.79	4.42	4.34	4.16	3.78	4.22	3.30	4.30	3.31	45.68

WESTON, MASS. (Stony Brook Reservoir, Cambridge Water Works)—Elevation, 60 feet
Record: January, 1890, to August, 1946

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	4.27	4.46	7.43	2.49	2.26	4.30	5.55	2.84	2.22	3.41	5.69	6.32	51.24
1943	4.26	1.34	6.09	3.13	4.61	2.48	3.73	1.25	1.47	5.35	3.40	1.12	38.23
1944	1.98	5.29	6.57	4.29	0.80	4.91	2.44	1.70	5.83	3.32	6.30	3.96	47.39
1945	2.20	7.05	2.18	2.98	5.42	8.84	3.79	3.70	2.35	3.93	8.89	5.68	57.01
1946	5.66	3.67	5.35	3.93	8.25	4.71	2.11	8.88	—	—	—	—	—
Av. 54 yrs.	3.67	3.62	4.22	3.72	3.67	3.51	3.49	3.64	3.69	3.31	3.54	3.63	43.11

WESTON, MASS. (Weston College)
Record: January, 1929, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.46	3.58	7.51	2.04	2.09	4.01	5.18	3.08	1.72	3.23	5.44	6.63	47.97
1943	2.69	1.09	3.99	3.45	4.51	3.18	3.96	1.08	1.22	5.07	3.78	0.93	34.95
1944	1.94	2.03	4.21	3.89	0.71	4.83	1.75	1.89	5.64	2.09	6.26	2.80	38.04
1945	2.84	3.78	1.88	3.02	4.70	7.07	2.98	5.93	1.23	2.99	6.79	6.90	50.11
1946	2.94	2.95	1.29	2.89	5.26	3.37	2.61	—	2.10	0.50	1.26	—	—
1947	2.93	2.05	3.57	3.99	4.73	3.16	5.86	1.61	2.75	1.25	3.97	3.89	39.76
1948	4.48	2.36	3.09	2.61	5.56	5.19	6.28	1.18	0.64	2.98	6.86	1.68	42.91
1949	3.59	2.81	2.46	4.53	4.20	0.77	—	1.24	7.54	1.68	2.56	2.18	—
1950	4.72	2.57	3.52	2.21	1.70	1.94	1.88	6.42	1.69	2.07	4.97	3.58	37.27
Av. 20 yrs.	3.48	2.83	3.85	3.76	3.11	4.09	3.33	3.34	3.70	3.15	3.95	3.08	41.67

WILLIAMSBURG, MASS.—Elevation, 550 feet
Record: January, 1913, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	2.95	1.90	6.09	0.54	5.48	3.31	6.27	7.11	4.48	4.70	5.16	5.86	53.85
1943	2.26	1.81	2.39	4.13	5.60	2.83	9.03	1.60	2.32	6.89	5.45	0.73	45.04
1944	1.72	2.10	4.97	4.22	1.25	3.81	3.30	2.35	5.43	2.22	5.56	3.90	40.83
1945	4.37	4.25	2.60	5.50	8.02	7.15	7.66	6.39	4.76	3.03	4.95	5.48	64.16
1946	2.72	3.11	1.48	2.53	6.88	2.94	4.95	2.56	7.31	1.69	1.29	3.71	41.17
1947	3.85	3.67	2.89	4.70	4.00	3.46	4.05	4.73	4.08	2.60	6.89	2.98	47.90
1948	3.86	2.85	3.94	3.47	6.40	6.83	3.20	3.37	3.27	1.30	4.73	4.38	47.60
1949	4.80	3.64	1.61	3.87	5.69	0.95	4.37	4.38	3.94	3.01	2.55	3.06	41.87
1950	5.62	3.54	5.57	3.81	5.05	2.80	2.76	3.07	2.33	2.37	7.72	5.20	49.84
Av. 38 yrs.	3.29	2.81	3.49	3.65	4.21	4.18	4.24	3.91	4.20	3.24	4.11	3.38	44.71

WILMINGTON, MASS. (Wilmington Water Works)
Record: December, 1933, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.65	2.60	6.44	1.46	2.35	3.46	5.57	1.57	1.74	3.01	4.13	5.38	41.36
1943	2.56	0.99	2.86	2.70	5.36	2.24	6.28	1.39	0.39	5.01	4.35	0.92	35.05
1944	2.68	2.07	3.82	3.16	0.61	5.05	2.67	3.69	6.29	1.85	5.59	2.63	40.11
1945	2.36	3.23	1.59	2.39	3.94	6.21	3.07	2.84	1.39	2.39	6.50	5.62	41.53
1946	3.67	2.66	1.52	2.48	4.82	3.43	1.71	7.55	2.80	0.56	0.98	3.55	35.73
1947	2.57	0.95	3.22	4.80	3.20	2.63	6.29	1.36	2.73	0.42	5.54	3.10	36.81
1948	4.17	1.88	2.35	2.67	5.03	5.13	3.17	1.35	0.98	2.60	5.30	1.46	36.07
1949	3.45	3.02	1.12	3.75	3.75	0.81	1.79	5.46	4.61	1.92	2.69	1.72	34.09
1950	4.34	2.71	3.51	2.20	1.52	1.98	2.60	4.02	1.20	3.20	6.43	3.24	36.95
Av. 17 yrs.	3.42	2.40	3.08	3.11	2.99	3.63	3.36	3.07	3.19	2.44	3.89	3.22	37.80

WINCHENDON, MASS.—Elevation, 1,130 feet
Record: August, 1893, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.23	1.72	6.61	1.35	2.48	5.33	5.28	2.39	4.13	3.44	4.27	4.94	45.17
1943	2.29	1.45	2.64	3.91	6.57	1.75	4.60	3.31	2.00	5.53	6.65	0.58	41.28
1944	1.33	1.84	3.56	3.15	0.99	8.92	3.77	0.44	5.66	1.80	3.18	2.54	37.18
1945	2.76	3.34	1.75	4.74	5.21	6.46	5.91	1.90	3.14	2.31	2.93	3.01	43.46
1946	2.69	2.93	1.72	3.45	5.09	4.96	3.76	4.80	4.62	1.09	0.98	3.04	39.13
1947	3.01	2.28	2.81	4.19	3.56	4.46	3.22	1.30	2.12	0.80	5.11	2.45	35.31
1948	3.48	2.06	3.09	3.05	5.93	5.12	4.05	1.08	0.66	1.82	6.86	2.44	39.64
1949	4.18	2.95	1.44	3.41	3.36	2.11	3.44	2.57	3.51	2.52	1.81	2.35	33.65
1950	4.63	2.74	2.18	2.87	2.53	4.56	2.38	5.01	1.14	1.52	7.15	3.51	40.22
Av. 56 yrs.	3.26	2.85	3.55	3.47	3.32	3.99	4.26	3.79	3.98	3.00	3.66	3.29	42.42

WINCHENDON, MASS. (Birch Hill Dam)—Elevation, 860 feet
Record: July, 1940, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1940	—	—	—	—	—	—	2.73	1.75	2.02	1.13	5.94	3.31	—
1941	2.26	1.64	1.29	0.65	2.14	2.57	2.96	—	—	—	3.03	2.51	—
1942	3.25	1.68	6.71	—	3.20	5.61	5.08	1.27	2.79	2.44	—	—	—
1943	1.81	1.47	2.39	3.12	5.00	2.19	4.61	2.48	1.17	4.48	5.80	0.65	35.17
1944	1.09	2.02	3.79	3.23	0.94	9.90	3.93	0.49	5.35	1.66	2.83	2.13	37.36
1945	3.37	3.41	1.87	4.84	5.39	5.27	6.11	2.69	3.67	2.43	3.34	3.78	46.17
1946	2.36	2.57	1.66	2.40	5.31	3.46	3.76	5.09	3.89	1.24	1.00	3.05	35.79
1947	2.95	2.23	3.31	3.58	3.45	3.74	4.37	1.60	2.97	0.76	4.99	2.57	36.52
1948	2.83	1.89	2.71	3.16	5.68	4.57	1.90	1.09	0.77	1.62	6.01	2.09	34.32
1949	3.69	2.60	2.20	3.94	3.21	1.68	2.47	2.25	3.91	2.17	1.73	2.48	32.33
1950	4.38	2.39	2.12	2.91	2.50	4.58	2.28	5.37	1.60	1.37	7.06	3.95	40.51
Av. 8 yrs.	2.81	2.32	2.51	3.40	3.94	4.42	3.68	2.63	2.92	1.97	4.10	2.58	37.28

WINCHESTER, MASS. (North Reservoir)—Elevation, 90 feet
Record: January, 1875, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	4.16	3.12	7.20	1.98	2.48	3.41	3.24	2.74	2.24	3.14	4.65	5.31	43.67
1943	2.94	1.13	4.19	3.35	5.22	1.85	3.78	1.67	1.53	6.29	3.94	0.91	36.80
1944	2.71	2.15	3.94	3.84	0.70	4.96	1.72	2.33	6.63	2.99	6.02	2.96	40.95
1945	2.76	3.68	2.08	2.88	4.64	6.26	2.55	3.74	1.14	2.75	8.15	6.90	47.53
1946	3.70	3.10	1.28	2.72	5.09	2.93	3.60	10.37	2.10	0.32	1.32	4.36	40.89
1947	3.18	1.11	3.34	4.53	4.80	2.97	4.39	3.54	2.46	0.63	7.31	3.92	42.15
1948	4.53	2.04	2.87	2.61	4.87	5.43	4.81	1.49	1.20	3.05	4.79	1.34	39.03
1949	4.34	3.39	1.13	4.20	3.49	0.71	1.87	4.47	4.21	1.77	2.83	2.18	34.59
1950	4.25	3.39	3.74	2.12	1.32	1.25*	1.23	4.22	1.67	2.77	6.01	2.83	34.80
Av. 76 yrs.	3.63	3.38	3.85	3.54	3.15	3.39	3.29	3.72	3.44	3.16	3.77	3.47	41.79

*Interpolated.

WORCESTER, MASS. (Worcester Sewage Disposal Works)—Elevation, 400 feet
Record: August, 1895, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	4.33	2.94	6.73	1.53	3.25	6.43	5.14	1.94	2.34	2.97	5.15	5.58	48.33
1943	2.45	1.55	3.85	4.23	5.50	1.69	4.56	0.97	0.50	6.00	5.26	0.95	37.51
1944	1.20	2.30	4.39	4.49	0.97	5.44	1.66	2.01	6.32	2.10	5.92	3.07	39.87
1945	3.13	3.31	2.70	4.21	6.37	6.10	3.58	4.11	1.75	2.20	5.78	5.58	48.82
1946	3.35	3.31	1.55	2.83	5.70	4.15	2.05	8.05	4.26	0.81	1.53	3.78	41.37
1947	3.10	2.17	3.17	4.92	3.95	3.66	5.35	2.22	3.99	1.25	5.08	2.45	41.31
1948	3.81	2.16	4.04	3.41	7.42	4.07	6.12	2.41	0.78	3.15	6.95	2.69	47.01
1949	4.18	2.90	1.84	3.95	3.49	0.44	1.23	2.61	4.04	1.88	2.75	2.82	32.13
1950	4.08	4.10	3.60	3.65	3.70	2.39	3.61	5.93	2.47	2.35	6.34	4.21	46.43
Av. 55 yrs.	3.44	3.21	3.92	3.68	3.34	3.78	3.66	3.69	4.02	3.03	3.86	3.52	43.15

WORCESTER, MASS. (Winter Hill Observatory)—Elevation, 625 feet
Record: January, 1905, to March, 1908 — January, 1915, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.57	3.66	7.62	1.26	3.00	3.79	4.81	2.70	2.44	3.46	5.23	5.96	47.50
1943	2.53	1.52	3.30	4.27	5.15	3.40	5.16	1.93	0.58	5.35	3.50	0.84	37.53
1944	1.29	2.20	4.36	4.16	1.03	5.35	0.63	0.90	5.44	1.74	5.47	3.25	35.82
1945	3.38	3.73	2.35	4.40	6.22	6.79	3.65	3.78	1.78	2.03	5.43	5.21	48.75
1946	3.32	3.31	1.55	2.43	6.50	3.02	3.45	7.01	4.01	0.94	1.50	3.27	40.31
1947	2.85	1.65	3.36	4.72	4.16	3.33	4.98	1.07	3.33	1.17	4.76	2.36	37.74
1948	3.15	2.05	3.30	3.44	7.38	6.17	5.77	1.86	1.04	3.30	5.51	2.44	45.41
1949	4.27	2.70	1.70	5.05	3.78	0.87	1.29	1.78	3.52	1.88	3.02	3.05	32.91
1950	4.13	3.95	3.89	3.98	3.26	2.64	2.46	5.90*	1.74	2.76	3.24	3.94	41.89
Av. 39 yrs.	3.41	2.93	3.50	3.61	3.55	3.87	3.82	3.37	3.94	3.02	3.87	3.32	42.21

*Interpolated.

WORTHINGTON, MASS.—Elevation, 1,500 feet
Record: January, 1917, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	3.34	2.29	6.02	1.91	4.73	3.37	6.33	3.45	5.43	4.96	5.31	6.40	53.54
1943	2.78	2.01	3.20	3.82	7.41	3.26	6.93	2.47	1.41	6.00	5.69	0.72	45.70
1944	1.38	2.40	4.86	4.18	1.57	5.29	4.89	1.09	5.17	2.34	4.64	3.89	41.70
1945	3.77	4.16	2.54	6.33	7.51	7.21	6.79	3.13	3.79	2.75	3.96	3.72	55.66
1946	2.66	3.61	1.37	2.71	6.95	4.65	4.70	2.58	6.03	2.00	1.27	3.93	42.46
1947	4.19	2.88	4.66	5.29	3.96	3.22	5.61	2.22	2.51	2.82	5.62	2.47	45.45
1948	2.14	2.83	3.57	3.36	7.76	8.14	2.10	3.20	1.59	1.93	5.14	10.92	52.68
1949	4.69	3.27	1.48	3.65	4.39	2.03	3.71	3.70	3.08	2.93	1.71	2.96	37.60
1950	5.02	3.55	3.08	2.81	5.19	3.16	3.42	3.49	1.47	3.07	7.12	4.36	45.74
Av. 34 yrs.	3.36	3.00	3.66	3.67	4.22	4.55	4.20	3.79	4.27	3.39	4.26	3.54	45.91

WRENTHAM, MASS.—Elevation, 250 feet
Record: January, 1921, to December, 1950

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1942	4.30	2.86	7.38	1.11	2.20	3.55	5.92	3.80	2.16	3.87	4.98	5.33	47.46
1943	3.38	1.26	2.26	3.79	4.97	3.07	4.10	1.82	1.26	5.55	3.39	1.16	36.01
1944	1.66	2.25	5.12	4.26	0.81	4.26	0.93	1.35	8.68	3.48	7.40	3.48	43.68
1945	3.29	3.10	1.52	3.25	4.88	6.51	4.99	4.03	2.19	2.86	8.96	6.96	52.55
1946	3.56	2.99	1.68	2.61	6.29	3.90	0.79	10.01	2.47	0.68	1.23	3.39	39.61
1947	2.90	1.44	2.83	4.92	4.96	4.52	4.76	2.07	5.92	1.42	6.04	3.70	45.48
1948	5.65	1.95	3.56	4.59	6.58	3.60	6.59	2.31	1.25	5.12	6.37	1.83	49.40
1949	3.64	3.98	1.86	4.52	3.88	0.20	0.64	3.94	3.20	1.64	3.14	1.72	32.36
1950	3.48	3.99	3.18	3.20	2.21	1.94	2.92	5.59	1.59	2.27	7.38	3.36	41.11
Av. 30 yrs.	3.75	2.94	3.75	3.92	3.34	3.89	3.61	4.07	3.50	3.12	4.25	3.42	43.56

PROCEEDINGS

NOVEMBER 1953 MEETING

HOTEL STATLER, BOSTON, MASS.

THURSDAY, NOVEMBER 19, 1953

President William B. Duffy in the Chair.

Secretary Knox announced the election of the following to membership in the Association:

Albert H. Andrews, Superintendent, Water Department, Norton, Mass.; Sterling G. Brisbin, Charles T. Main, Inc., Boston, Mass.; Martin E. Flentje, Research Engineer, American Water Works Service Co., Inc., Philadelphia, Pa.; Richard F. Greeley, Engineer, Metcalf & Eddy, Boston, Mass.; William E. Lyons, Superintendent, Albertson Water District, Albertson, N. Y.; Clifford L. Williams, Superintendent, Lincoln Water District, Lincoln, Me.; Stephen M. Hurley, Sanitary Engineer, Rhode Island Department of Health, Cranston, R. I.; Everett L. MacLeman, Assistant Professor, Yale University, New Haven, Conn.

Associate Member. Precision Machine Co., Somerville, Mass.

On motion duly made and seconded, the following specifications were adopted:

C100-52T — Tentative Standard Specifications for Cast-Iron Pressure Fittings. Printed, JOURNAL OF N.E.W.W.A., June, 1953.

C500-52T — Tentative Standard Specifications for Gate Valves for Ordinary Water Works Service. Printed, JOURNAL OF N.E.W.W.A., March, 1953.

C502-53 — Standard Specifications for Fire Hydrants for Ordinary Water Works Service. Printed, JOURNAL OF N.E.W.W.A., September, 1953.

A21.6 — American Standard Specifications for Cast Iron Pipe Centrifugally Cast in Metal Molds, for Water or Other Liquids. Printed, JOURNAL OF N.E.W.W.A., September, 1953.

A21.8 — American Standard Specifications for Cast Iron Pipe Centrifugally Cast in Sand-Lined Molds, for Water or Other Liquids. Printed, JOURNAL OF N.E.W.W.A., September, 1953.

A21.11 — American Standard Specifications for a Mechanical Joint for Cast Iron Pressure Pipe and Fittings. Printed, JOURNAL OF N.E.W.W.A., June, 1953.

A paper on "Restoration of Worcester Water Service after Tornado," illustrated with tornado films, was read by Charles B. Hardy, Superintendent of the Bureau of Water, Worcester, Mass.

A paper on "Believe-It-or-Not Experiences with Chemical Feeders" was read by R. J. Leveque, Omega Machine Co., Providence, R. I.

A paper on "Danvers, Massachusetts, Water Supply" was read by Vernon C. Russell, Water Department, Danvers, Mass.

DECEMBER 1953 MEETING

HOTEL STATLER, BOSTON, MASS.

THURSDAY, DECEMBER 17, 1953

President William B. Duffy in the Chair.

PRESIDENT DUFFY. Since our last meeting Professor George E. Russell has passed away. Professor Russell was head of the Hydraulics Department of Massachusetts Institute of Technology, and a noted authority in this field. He was active in the affairs of the New England Water Works Association, which he joined in November, 1919, and conducted the Water Works School of the Association from 1936 to 1946. We all regret his passing, and it would be appropriate if we stand a moment in tribute to him.

(*The members stand in silence.*)

In the absence of Joe Knox, who had to fly to New York on one of his many duties, I shall read a list of the members who were elected today:

Ferd C. Arens, New England District Manager, Rockwell Manufacturing Co., Boston, Mass.; Charles G. Bourgin, Engineer and General Manager, Water Department, East Orange, N. J.; Thomas P. Gallagher, Sales Engineer, Rockwell Manufacturing Co., Boston, Mass.

Reinstated. Hervey J. Skinner, Vice-President, American Conditioning House, Inc., Boston, Mass.

The first item on the program this afternoon calls for a vote on the proposed amendment to the Constitution, which is printed on the reverse side of the program. This is an amendment recommended by the Executive Committee:

"Section 1, Art. VIII of the Constitution is hereby amended by inserting after the word 'September' the following words 'or October,' so as to read as follows:

"Section 1, Art. VIII. The Annual Convention of the Association shall open at such time and place in September or October as the Executive Committee shall designate."

* * * *

Upon motion duly made and seconded, the above amendment was adopted.

A talk on "Activities of the Water and Sewage Division, Business and Defense Services Administration" was given by Thomas Quigley, Director Water and Sewage Division, Business and Defense Services Administration, Department of Commerce, Washington, D. C.

A paper on "Operating Experiences of the Kittery, Maine, Water District" was read by Francis L. Hatch, Superintendent, Kittery Water District, Kittery, Me.

A film, "Production of Cast-Iron Pipe," was shown through the courtesy of the McWane Cast Iron Pipe Co., Birmingham, Ala.

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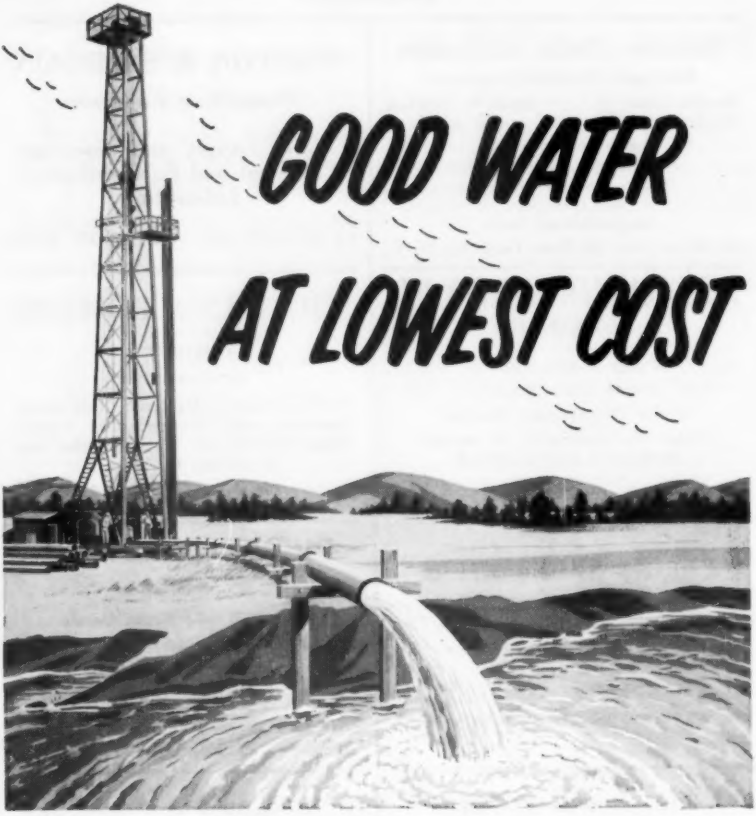

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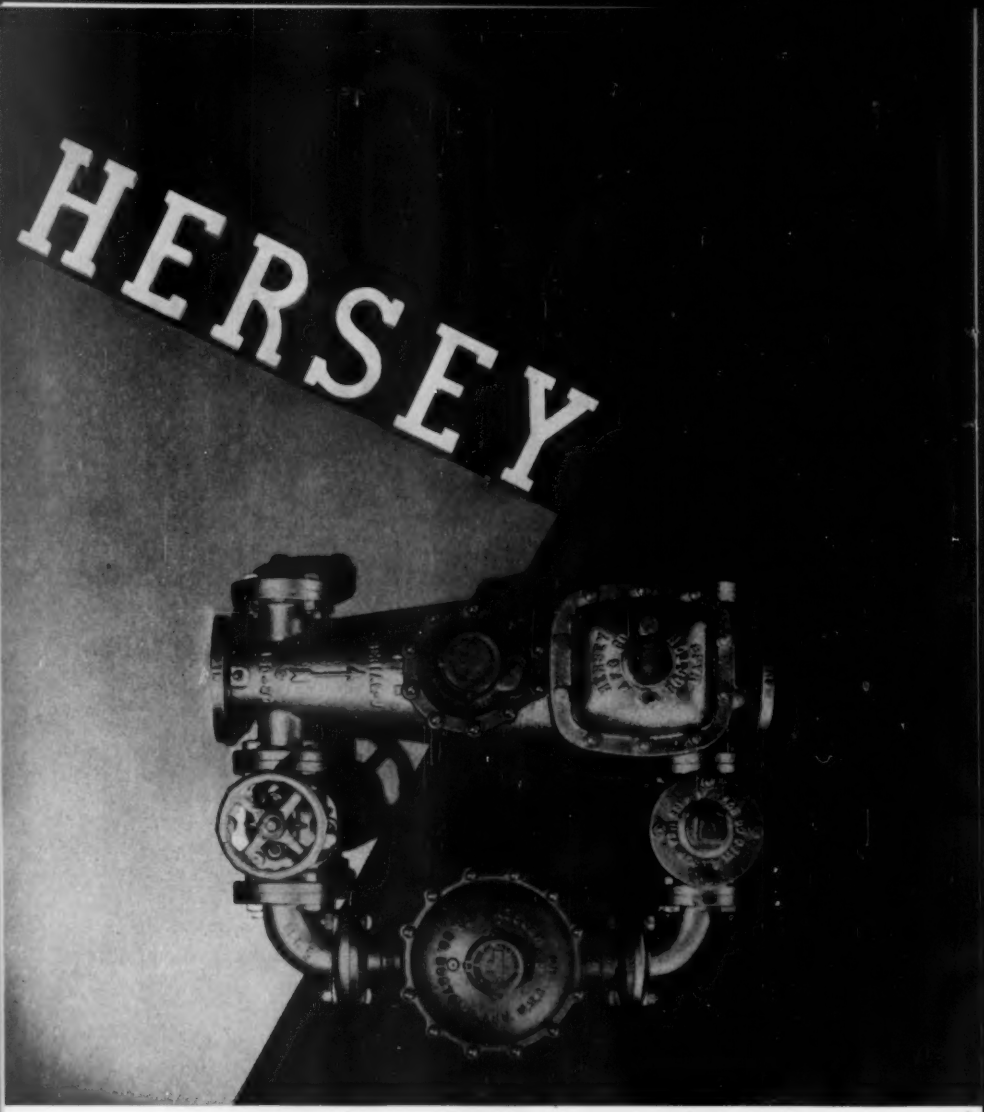

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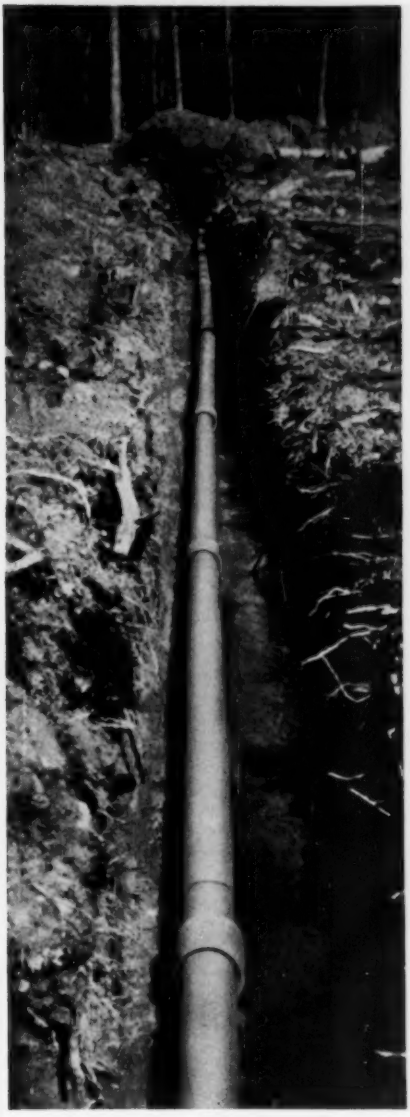

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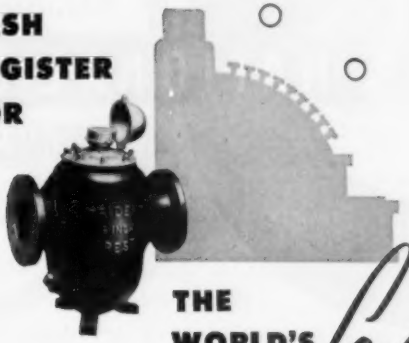

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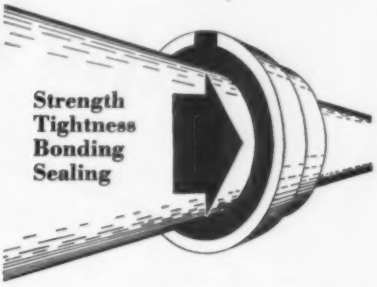

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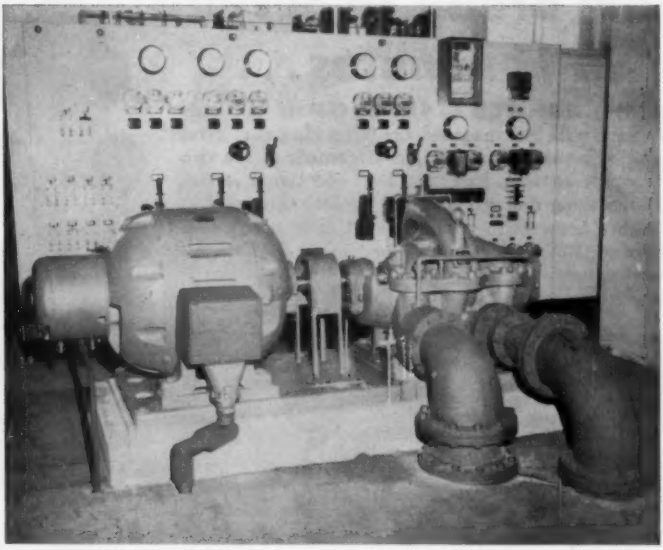

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WATER WORKS PRODUCTS

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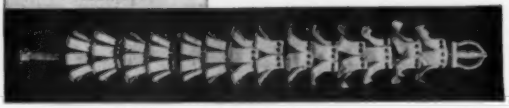

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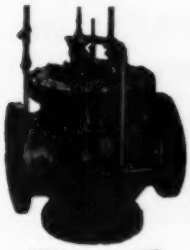

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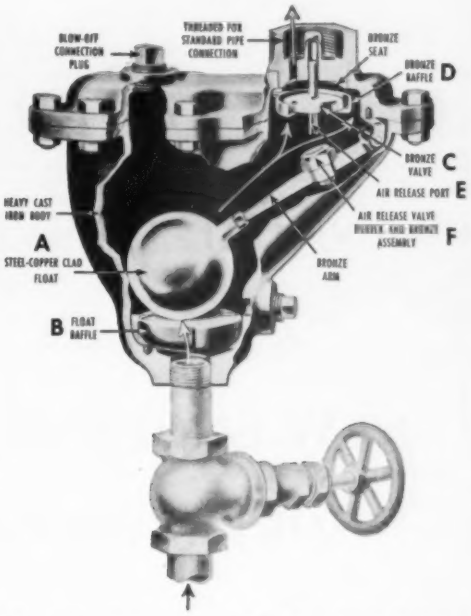

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